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WESTGARTH PRIZE ESSAYS.

ESSAYS

ON THE

STREET RE-ALIGNMENT, RECONSTRUCTION, AND SANITATION

OF

CENTRAL LONDON,

AND ON THE

RE-HOUSING OF THE POORER CLASSES.

TO WHICH PRIZES OFFERED BY WILLIAM WESTGARTH WERE AWARDED BY THE SOCIETY OF ARTS, 1885.

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PREFACE.

IN December, 1883, Mr. William Westgarth offered the Society of Arts a sum of £1,200 to be awarded in prizes for essays on the best means for providing dwellings for the London Poor, and on the reconstruction of Central London. The offer was referred by the Council to a Committee, and on the report of that Committee the offer was accepted. In January, 1884, notice was published in the Society of Arts "Journal," stating that this sum would be awarded in prizes for essays on the above subjects, and giving the conditions of the competition. The total was divided into one prize of £500, one of £250, and three of £150. A reprint of the terms of the offer will be found in the Appendix, page 263.

In order to afford sufficient time for writers, not only in this country, but abroad; the date at which the essays were to be sent in was fixed as the 31st December, 1884. In response to the offer, 27 essays were sent in, and these were submitted to the judgment of a Committee appointed by the Council. The report of this Committee was published in the Society's "Journal" for the 5th of June, 1885 (see Appendix, p. 265).

It was to the effect that in their opinion none of the essays realized the requirements of the offer in such a

manner as to justify the Committee in recommending the award of the full amount of the prizes offered. They, however, recommended that prizes amounting in all to £600 should be awarded, namely, three prizes of £100 each, three prizes of £50 each, and six prizes of £25 each. The Committee also recommended that the three essays to which prizes of £100 were awarded should be published. The Council adopted the report, and, in accordance with the last portion of it, the three prize essays sent in by Mr. Bridgman, by Mr. Corbett, and by Mr. Woodward are now published.

H. TRUEMAN WOOD,
Secretary to the Society of Arts.

CONTENTS.

	PAGE
INTRODUCTORY REMARKS. BY WILLIAM WESTGARTH .	1
THE SANITATION AND RECONSTRUCTION OF CENTRAL LONDON. BY WM. WOODWARD, A.R.I.B.A.: P.A.S.I. .	23
STREET RE-ALIGNMENT AND RE-CONSTRUCTION OF CENTRAL LONDON. BY HENRY HEWITT BRIDGMAN, F.R.I.A.B. .	151
ON THE RE-HOUSING OF THE POORER CLASSES OF CENTRAL LONDON. BY J. CORBETT	239
APPENDIX	263

INTRODUCTORY REMARKS.

BY WILLIAM WESTGARTH.

I OFFER here some introductory remarks with reference to these prizes: first, as to what were my objects in offering the prizes; next, how far these objects have been, or have not been, attained by the prize essays; and lastly, what are the general prospects as to some very grave public questions to which I have thus endeavoured to direct attention.

THE OBJECTS OF THE PRIZES.

There were two principal objects: one as to the possibility, by co-operative and wholesale arrangement, of comfortably and respectably housing the very poorest classes of London regular industrial life; the other as to the practical feasibility of any scheme of reconstructing overcrowded Central London, as a self-remunerative business enterprise, based, for ultimate recoupment of expense, mainly upon the "Natural," or as heretofore rather invidiously called the "unearned" increment of site value. Allow me a few explanatory remarks upon each of these questions.

1. HOUSING OF THE VERY POOR.

A very large section of what may be distinguished as the regular industrial life of London, is paid by a rate of wage-earning that cannot possibly, from any resources as yet

available to the earner, support him or her in healthful life: as to cheerful life, or respectable life, they are entirely out of the question. It is chiefly women workers who are in this utterly hopeless position. The principal section of these, and perhaps the most striking illustration of the whole, is that of the needle-women of East London, whose earnings, derived from ten to fifteen hours of incessant labour, when they are so fortunate as to be always employed, average about a shilling a day. Need I repeat that by no possibility can man or woman find now the means of existing in London, in health and decency, upon a shilling a day or six shillings a week. And yet in this vast and wealthy city of London here is one of its great and regular industries, counting its victims by hundreds of thousands, which is, permanently, year after year, thus remunerated. The "Pall Mall Gazette," in a series of articles upon the London workers, has given in one of them (18 July, 1884), a graphic picture of the East London needle-women, numbering always probably above a quarter of a million souls. The case of these multitudes of women, most of them quite young, many, perhaps, just fresh and healthy from the country, all of them possibly beginning their hapless life in virtue and innocence, is one, not of living, but of dying. Their inevitable circumstances constitute for them a process, not of life, but of death—death, physical and moral.

And yet there is hope that the marvels of the co-operative and wholesale system may solve the problem of even their very extreme case. Let us look around to learn from experience how the large section of extreme poverty in London is being now suited, or how it contrives to suit itself. The typical case seems to be that of the large lodging tenement, which a speculator in human destitution takes up as a business. He is but little disturbed by sanitary considerations. He lets countless beds at 4*d.* a night, perhaps at less, and the other feature of the case is a common room for cooking and sociability, which, for economy's sake, with those who are not particular, is usually

the basement or cellarage. Hardly should we denounce our speculator, although he is known to make large and even enormous profits; for, with a business neither easy nor savoury, he is still a necessity of his day, and without him would there not be only still less accommodation and still more misery?

Now, although this is not a mode of living endurable to respectable men, and still less to respectable women, yet we are guided, in the fundamental idea, as to the indispensable cheapness, and we are further guided as to possible sociabilities, which might cheerfully contrast with the usual wretched and solitary monotony of such a life as the needle-woman's. Our task is, along with these economies, to combine the further elements of sanitation and decency. I propose to attempt the solution of this question after seeing how far I have been helped to it by the prize essays.

2. The Sanitation and Reconstruction of Over-crowded Central London.

This second project, equally with the first, which I have above described, was intended to be a self-remunerative business enterprise; and towards the recoupment of its enormous expense, I proposed a practical application of that resource which economists have long recognised in theory, namely, the so-called "unearned increment of value." But I would first change this invidious-looking term to that of "natural" increment, to distinguish it from increase of site value due to outlay of capital. Natural increment, then, is simply that rise in site or area value which comes of the increase of population, commerce, and wealth, upon limited or inextensible areas. It is the feature of the real estate of all progressive countries, and still more markedly of the sites of their larger towns; and it has been more conspicuous in London, and notably in central London, than perhaps anywhere else. So great has been this natural increment in the great metropolis,

and especially in the central business sites, that if a great scheme of sanitary reconstruction had been happily undertaken, say thirty years ago, its cost, enormous as it must have been, might have been completely recouped by the said natural increment of value. As the cause of this advance still continues—as, for instance, in London, where population, commerce and wealth, still steadily advance when taken, at least, by intervals of twenty or thirty years—so we are assured that the increment feature is also to go on. No doubt that better and more general knowledge of this natural increment, which has prevailed of late, must have the effect, by anticipatory calculation, of throwing some of this future into present value. But in the nature of the case there will still always be a substantial natural increment, because present values are regulated much more by the actual business conditions and returns of the day, than by what these might be estimated at for the next generation.

Some mode of dealing practically for the general good, with this great recouping resource of natural increment seems to give the promise of a chief remedial feature of the future. The question has, however, in this practical business way, come to the front only within the last two or three years. But already the Birmingham Improvement Commission and our Metropolitan Board of Works have begun to act in view of its principle, that, namely, of holding to improvement expropriations until the natural increment has recouped, or materially helped to recoup, all the costs.

The question here arises how this is best to be done, consistently with substantial and permanent erections and improvements upon the expropriated areas. The great Paris reconstruction—an account of which, as supplied to me by the British Chamber of Commerce of that city, I have given in the Appendix—illustrates alike a total disregard of natural increment for the city's behoof, and the enormous subsequent realisation which the increment gave to the private purchasers. These latter, therefore, made their fortunes at the expense of the city, which has been

saddled with over £50,000,000 of net loss. The Paris expropriations, as soon as the areas were cleared, realigned and otherwise prepared, were sold in freehold lots by public tender, and under some agreement as to substantial re-erections. Within a few years the site-value had increased by even a hundred per cent. But to have secured this increment for the city, some deferred or leasing system must have been substituted for immediate sale. But tenants will not make substantial and permanent buildings, under ordinary leases, say of not over thirty years, while very long leases constitute an undesireable system. The solution points to a leasing system for, say, not exceeding thirty years, with right of eventual purchase to lessee. His rent payment for the first five or seven years would be small, but natural increment would increase rent afterwards, and between these advancing rents and the amount of final purchase the full recoupment is to be effected. Either lessor or lessee may erect the buildings; but the latter may optionally void his lease at its several stages, and with compensation if he is the builder; for only thus can full recoupment terms be secured from him. The lessor must have full faith that natural increment will eventually make everything good. The probability is that, with very few exceptions, the lessees will stick to their sites, and duly exercise their option of eventual purchase.

My scheme was to be one of ordinary business enterprise, and entirely self-remunerative. I proposed to dispense even with application to government, in terms of the Act, for loans at low interest rates, or for sites below market value. All opinion is favourable to private enterprise if it can possibly, and to adequate extent, accomplish such projects, instead of governments or municipalities. I contemplated a great joint stock company, with sufficient capital-guarantee, the capital being raised in the least exacting way, namely by a small paid-up proportion, and a relatively large liability capital. By making the shares of large amount, as of £1,000 to £10,000 each, a highly responsible and comparatively permanent

shareholding would be best secured. The company would claim certain facilities and privileges to enable it to take action wherever the suitable field offered. On the other hand, its management was always to include Government and Municipal representation, and no step was to be taken without the consent or against the veto of such representation. One privilege in particular was to be claimed, and was not unreasonable in view of the otherwise entirely self-supporting character of the enterprise. The company, with its relatively small paid-up capital, must needs be a large borrower from the public by means of loan issues, and the claim in question would be that its loans were to have the contingent security of a rating liability of the improved city. This security would materially reduce the rate of interest to the company, while the risk to the city could hardly be more than nominal, in view of the interposition of the company's capital and effects. The company's dividend or profit should be a fair remuneration, but also, in view of this contingent rating liability, it should be matter of official agreement. If the company felt strong enough to dispense with the rating liability, it might of course deal more freely with its dividends.

The question, then, was as to whether the reconstruction of central London were a practicable scheme; and supposing it to be such, I threw out some suggestions as to certain important and desirable features of the reconstruction. These were mainly of three kinds: first, a roomy "subterranean," involving perhaps, to some extent, an eventual rebuilding of the city, and providing full accommodation for all future wants in business storage, sewerage, water supply, lighting, and electrical applications, and perhaps for a thoroughfare below to relieve the streets above from the slow and heavy section of their traffic; all this, when done once for all, would supersede the interminable disturbance of breaking up the streets. Second, a terrace arrangement, by which, with bridged crossing connections, foot passengers would be lifted out of all the dangers of the streets in the most crowded thoroughfares, from which there are now such countless

accidents, including the loss of hundreds of lives annually. This feature might be highly ornamental as well as convenient to the city, while the second line of shops would help economic results. Third, the flat roofs, which are now so generally adopted for the newer buildings and model lodgings of the crowded parts of London for various purposes, including recreation, might be extended, under any general reconstruction, into large areas for parks or gardens, thus realizing Dr. B. W. Richardson's oft-expressed ideas on this grand sanitary resource.

How far the Prize Essays have fulfilled their intended objects.

I shall offer a few remarks under this head, and then conclude my introductory sketch by a brief reconsideration of the whole subject, by help alike of these essays, most of them giving much useful information, and by the reconsideration which during upwards of a year's interval I have myself given to it. I propose to begin with :—

1. As to Housing the very Poorest Classes of London.

So far as regards meeting the case of these poorest workers —which was my chief, or indeed my sole aim—absolutely nothing has been done by the essays. The minimum costs of housing are still far above the case of, for example, the East London needlewomen, with their average earnings of only 6*s*. a week. One of the essays (that by Messrs. Scott and Tilley) thus classifies London industry, not, perhaps, incorrectly: those earning 20*s*. a week are not poor; from 20*s*. to 15*s*. a week they are poor; at and under 15*s*. they are very poor. But there is an ominously wide interval between the very poor who rise towards 15*s*. and those who sink to 6*s*. In the view, however, that the 6*s*. applies to single individual's earnings, while the 15*s*. means those of a

family, the two sums may represent a common level of extreme poverty, whose problem is still to be solved. Mr. Wynter Blyth and Dr. Greene in their essay touch upon a promising resource in "poor man's hotels," where co-operation and wholesale might be turned to good account in the direction of cheapness. These hotels, as proposed, resemble coffee taverns, with lodger's rooms. But as the estimate requires 8*s.* 11*d.* a week to board and lodge an adult, our problem is as unsolved as ever. Amongst other excellent suggestions for classes above the poorest, may be mentioned the steam ovens for economising cookery, and the warming of the houses, as given by Mr. Corbett. I propose to improve still upon some such cheap and effective mode of both heating and cooking, by making it associative, so as to supersede entirely all the cost, time-wasting, and inefficiency of separate providing; for in no other way is a comfortable home possible with the small means of London's poorest industrial classes.

The same writer makes this crucial remark at the beginning of his elaborate and excellent paper towards housing the London poor (herewith printed):—"Though much economy might result from some system of 'associated homes,' yet the personal independence, the family privacy and purity, and the gratification of deeply-rooted national prejudices, resulting from maintaining complete isolation in each home, quite forbid the idea of association, except for reading rooms, children's play-rooms, and other such purposes." Granting some general truth to this view, I yet venture to think that it is far too strictly drawn. If we are to be thus hedged in, the solution of my problem of living comfortably on 6*s.* a week is quite impossible. But the common enjoyment of hotel life, which may be viewed as association *in extremis*, is a refutation of so strict a view. Life on shipboard is another such refutation, for we see there the needed privacy sufficient when limited to very narrow sleeping quarters, and noways inconsistent, for days, months, and even years together, with a life of perfect decency, health and comfort. One prominent evil of poor homes, indeed, has been the

habit of living in bed-rooms. These need not be large or costly if not to be lived in. I shall return to this aspect of our question when I have done with the prize essays. The benefits of the economy of association are well expressed by another of the essayists (Mr. Jetley), in his remark that it "gives an opportunity to the poorest of living in a mansion instead of a hovel."

2. As to the Sanitary Reconstruction of Central London.

The essays touching on this question agree generally that the scheme is impracticable, owing to the great value to which the property to be dealt with has now attained. Thus Mr. Usill deems it impossible, chiefly on account of the "interference with property of enormous value." Mr. Woodward, whose essay stands first in this volume, also, in his interesting and historically retrospective inquiry into London improvement, takes the same view. He discusses a great company, privileged and helped as I proposed, but concludes that the cost of central London reconstruction is far too great to contemplate. Mr. Bridgman's essay, also printed in this volume, is full of practical information on the suggested great reconstruction, and he aims, with fair success, in putting it in a feasible shape, if it were at all a possible undertaking.

My own inquiries and reconsideration, during the interval since the prizes were offered, bring me to the same conclusion. At a preliminary conference on the question at the Mansion House, with which the Lord Mayor (Alderman Sir R. N. Fowler) favoured me last year, one of the speakers, in illustration of this chief difficulty of enormous cost, stated that Lombard Street alone had been valued, for expropriation purposes, at one hundred millions! The Royal Commission on the Housing of the Poor, in its late report, alludes prominently to the obstruction and difficulty everywhere, to improvement enterprise, caused by inordinate compensation claims, and perhaps this Lombard Street

case may be so regarded. But even with every fair abatement for Lombard Street and the rest of the costly business centre, the sum involved could be hardly short of that of the whole national debt, and therefore beyond all practicable compass through any agency whatever.

I feel warranted, however, in asserting that but for its impracticable magnitude, the reconstruction, under fair expropriation terms, might be an economic success. "Natural increment" has been greater and surer in central London than anywhere else. The fact of the extensive private reconstruction now going on, albeit at much disadvantage in its patching and piecemeal way, may be held to prove that systematic reconstruction would be an economic success. Whether business London would now submit to the great though temporary disturbance of "Haussmannising" its central region may possibly be a question, especially as these private reconstructions have put most of it into decent condition as compared with the past. With this endurable attainment, and in view of the cost of disturbing it, and the aversion to the disturbance, the London Haussmann will perhaps be kept always at bay. But this planless private reconstruction, too often grotesque patching, leaves mostly unchanged those narrow and devious old streets and lanes which are utterly inadequate to the modern business. I propose, further on, to consider what may be still practicable in dealing, as a self-remunerative enterprise, with a reconstruction of the overcrowded and ill-conditioned parts of London. In expropriating on the large scale, which is thus contemplated, it seems only equitable to give to the many disturbed proprietors, or tenants, as far as may be practicable, the option of retaining their respective holdings, provided they co-operated in the proposed improvement. Opposition and dissatisfaction would be thus abated, while a company might, with economic advantage, undertake a great scheme by help of this mode of diminishing the costs. By such co-operation of its wealthy occupants, something might be done even with costly central London, more especially if an outer ring

of the cheaper ill-conditioned sections were successfully dealt with.

WHAT MAY STILL BE DONE TOWARDS THE OBJECTS OF THE PRIZES.

I shall now sum up my case as to what may still be accomplished towards fulfilling the objects of the prizes: first, as to housing the very poorest of London's industrial classes, and second, as to the sanitary reconstruction of the over-crowded and ill-conditioned parts of central London. The feature of my scheme, as I have already said, is its independent character as a self-remunerative business enterprise. I am now to point out the scope of action and the mode of procedure, together with the concessions or privileges which a company, or trust, of adequate guarantees would require for the enterprise.

I had in view that both these great objects should be undertaken by one and the same company, as re-construction and re-housing might go fitly together in some localities. In any great re-construction scheme there would probably be a strict obligation under the present law to restore at least as much working-class accommodation as it would have to demolish. And again the large scale of operations necessary to secure all the economy of wholesale, would be more surely attained by undertaking both objects together.

HOUSING OF THE POOREST INDUSTRIAL CLASSES.

Bear in mind that we are dealing with the regular and permanent industry of London, however poorly remunerated may be some of its sections. So long as the earnings of a large section of this industry are so small that an endurable life cannot be made out of them, society presents a great open ugly sore which can never heal under the circumstances. The East London needle-women of six shillings a week exemplify such a section. They are a permanent

industry involving hundreds of thousands of persons, and their sex renders them, under the said circumstances, alike peculiarly helpless and peculiarly hurtful. They constitute, in short, a rankling sore of our society, and the fertile source of the irrepressible "social evil" of London life. To make it possible that their small earnings can suffice for their reputable and endurable existence in London would free the position from its present despair, and would alleviate incalculable misery. Let us, then, face this pressing problem.

One of the prize essayists would avoid closed-in blocks of building, as they do not admit so well as single lines of tenements of the free play of outside air for ventilation purposes. But the difficulty is to get this outside free play admitted inside. Adequate ventilation, incessant while unfelt as draught, may be structurally secured for forms of building best suited in all other respects to my object. I propose, therefore, a square or oblong square edifice of several floors, with a central court roofed with glass. This latter is to serve as the common hall or sitting room. The hall is surrounded by a verandah for each floor reached by stairs, and giving access to the separate rooms on the respective landings. The verandahs should be roomy, because they are to form addition and variety to the hall or sitting accommodation. The rooms are properly for sleeping, not for living. They are therefore economised in every way, either as very small rooms, or as ordinary rooms subdivided with sufficient isolation of each occupant. Architectural resource will be equal to all this. The hall being lighted and warmed, all cost in this respect is saved to the rooms; partial glass partitioning of the rooms may help in this way. Each room might have a minimum of sufficient bedroom furnishing in the form of fixtures of a lasting and incombustible kind. This would greatly favour cleanliness, diminish risk of fire, and at very small addition to rent, be of the greatest convenience to poor tenants.

The feature as to food supply is the institution of what I would call the "House Diet." This should be the latest

and best outcome of science and experience in preparing cheap, nutritive and palatable food. Suggestive guidance on this head pours upon us in free abundance from all directions. Take, for instance, the many articles on the subject of late in the popular weekly publication *Knowledge* (as one of many examples, the article "Practical Dietetics," 17th Oct., 1884.) A sufficiency of wholesome food is thus reduced to an almost incredible minimum of cost. The House Diet is optional, and, of course, for those who are unable to do better. Others better off may either dispense with it or supplement it.

The rent should include a sum for ultimate redemption, making the tenant proprietor of the room. This arrangement is not without objections or difficulties. Miss Octavia Hill, to whose practical mind in a crossing of our views I am greatly indebted, apprehends that, as eventual proprietors, the tenants would prove too little amenable to the strict order and discipline which would be always necessary. But all the advantages seem to me greatly to outweigh this risk, which, again, would be much diminished by help of the strict selection under which the first experiments at least would be conducted. Practically the additional payment would be unfelt, as it might, on emergencies, be borrowed back, partially or wholly, on security of "title deed," some such document being issuable. The Royal Commission, in noticing the benefits of this system as introduced by Sir S. Waterlow's "Chambers and Offices Act of 1881," recommends such extension of the act as might meet our present case, as well as the others intended.

The mode of management is, of course, in some respects, quite a new experiment. It is no less than an experiment upon our human nature, rendered unusually captious and uncertain under unusually trying circumstances. But what we are to attempt is not perfection in any direction, that being impossible, but a substantial improvement upon the desperate present conditions. Contemplating a great scale for the economies' sake, say with, at the least, a thousand tenants, the Trust which builds the edifice, puts in a

manager. He should be a married man, as his wife, in view of a tenantcy always perhaps largely of single women, will also have her sphere of work. The tenants cannot, or will not co-operate in binding partnerships. Miss Hill's experience is very decisive on that point. The manager, it is intended, shall cater for them, and he can hardly be so stupid as entirely to miss his opportunities; but the tenants must be free.

Let us now estimate the expenses. The House Diet I put at 2*d.* a day, or including manager's profit at 1*s.* 4*d.* a week. The saving in rent is even greater than in food. The poorest classes are peculiarly helpless as to rent. Ostensibly they are the victims of the "middlemen," who make fabulous profits out of their misery; indeed it would seem to be the rule that the poorer and more helpless the tenant the higher the rent. The Royal Commission, in alluding to this evil of the poor tenant's lot, instanced one case where a house rented at £20 yearly was sublet in rooms at a total of about £100! But the difficulty is to dispense with the middleman, whose risky and ungainly business, not less harrowing than harassing in the realms of destitution, will always, on Adam Smith's inevitable principles, secure him his exceptional profit. Our experiment may not quite abolish the middleman principle, possibly indispensable in such extreme cases; it rather permits to him only the minimum of profit. I put the rent of each room, then—or, as I prefer to describe it, each sufficient sleeping accommodation—at 1*s.* 1*d.* per week, the penny being added for the fixtures. But appended to the sleeping quarters are the respective verandahs and the great common hall. The lighting and heating, the cleaning, the fire insurance, the water supply and rates, the management, and five per cent. on capital, I must put as high as 2*s.* per head. If even this be too little for only a thousand heads, as it possibly may be, we must raise our thousand to so many more heads, as we have thus our economic regulator in the scale of the wholesale. And lastly comes 8*d.* to 9*d.* for redemption fund, making the total a fraction over 5*s.*; viewing the redemp-

tion as, so to say, "found money" recallable at any time, the total of food and housing would seem to be brought within 4*s.* 6*d.* a week.

How far may it be possible to Reconstruct overcrowded Central London?

We have seen that the central business area immediately around the Royal Exchange, comprising a small circle of perhaps not over two-thirds of a mile in diameter, cannot be touched by reason of its enormous value. It is but fair to add that all, or nearly all, this section has already been reconstructed or improved to the extent that was possible to private, desultory, and unsystematic effort. This almost complete reconstruction of its kind has of late considerably extended from the centre, under the demand for countless business offices—as, for instance, eastwards down Leadenhall and Fenchurch Streets. All this semi-sanitation, as it may be classed, we must be thankful for and contented with for the present, although it still wants adequate thoroughfares on the surface, and everything of subterranean public convenience. Let us turn to the still unimproved sections outside of, but still adjacent to, this costly centre. Here we have the advantage of dealing with a relatively low present value due to bad condition, and the prospect of adequately enhancing that value by a proper sanitary and business reconstruction. This result would be still more assured if such sections, in their reconstruction, were put in contact all round with parts of the City already in good, or comparatively good, condition. Take, for instance, the ill-conditioned Houndsditch vicinities. On the City side they skirt the high-valued centre; on the other sides, going as far north, say, as the Great Eastern station, they are flanked nearly all round by great thoroughfares. A business enterprise, adequate to grapple systematically with all this square mile or so of ill-conditioned London, has the promise of a remunerative field, even if expectations

be based only on the fact of the private reconstruction incessantly going on before our eyes, in spite of its unsystematic disadvantage. These partial reconstructions, including, as a special feature of this particular section, many model dwellings' structures—Waterlow's, Peabody's, &c.—constitute, of course, an improvement on present conditions ; but, flung about as they all are in their unsystematic way, they are rather obstacles to our great scheme. Still, any observer of this area will find an abundant field yet remaining ; and the same remark may apply to like ill-conditioned sections in other parts of overcrowded London, such as large areas occurring between Fleet Street and the Strand on one side, and Holborn and Oxford Street on the other, and particularly the proverbial Seven Dials region, which is now in course of some partial rebuilding, and where a great reconstruction as between Oxford Street and the West Strand might prove a business enterprise of sanitary reconstruction equally noble and interesting, gigantic and economically successful.

Such, then, is the qualified view I have arrived at in the question of the reconstruction of the overcrowded and ill-conditioned parts of London. We have a happy circumstance in the fact that the very worst conditioned parts are those which give the surest business promise. The disadvantage and the consequent cheapness of bad condition, and the great advantages and consequent increased value form chiefly the basis of the good business prospect. If our resources are adequate to grapple with the whole of any such bad section, and to convert the entire area from bad to good, we secure the maximum of advantage. The advantages of partial clearings or reconstructions of condemned localities, as must have been repeatedly noticed, have been minimised or counteracted by their inadequate extent, which left the improved still bedded in the unimproved. If we must give up hope of directly reconstructing the too costly business centre, yet even there the co-operation of its wealthy occupants, if stimulated by some great and successful reconstructive enterprise in the outer and less costly

sections, might tell for something in needful changes. Indeed, in contemplating reconstruction in any even of the worst-conditioned and overcrowded parts of the City, I look for powerful help from voluntary co-operation, as being to many siteholders the preferable alternative to expropriation.

A Conclusion of Practical Considerations.

Lord Shaftesbury's Act, as Sir R. A. Cross tells us in his late useful summary of the rehousing question in the June issue of the "Nineteenth Century," was benevolently intended to meet pressing rehousing emergencies by enabling vestries to borrow money for building purposes on mortgage of the rates. But this Act has since proved a dead letter, owing to a variety of obstacles that were still uncleared away, and of facilities that were still withheld. The Royal Commission, in noticing this abortive condition of the Act, suggests some important extensions, such as an enlargement of scope, from parochial to metropolitan compulsory powers of land purchase, and the power to act in spite of ratepayers' objections. Premising that it is almost infinitely better to have this rehousing, like other such ordinary business, done by private enterprise, if that be possible, instead of by vestries or any other public body, one is tempted to ask if it be not also possible, especially in such important objects, to remove every hindering obstacle, and to grant every needed facility, so that the desired work may go on of itself? I take the case of this Act as a sort of text on which to hang a few practical considerations upon obstacles and facilities in regard to all the possibilities of the country's enterprise, and particularly that section of it which, under the special considerations of "natural increment" of site value, and other points I have adverted to, might take the direction of the much-needed sanitation and other improvement of our larger towns.

There is hardly any considerable business enterprise but

requires, for some part of it, a special legislative sanction. And here, between the standing feature of "parliamentary block," the free play allowed to every kind of opposition, the enormous law and other costs attending every step, and the delay and uncertainty of the result, most enterprises are strangled shortly after birth, and very many more, through anticipatory despair, are never brought to the birth. The Manchester canal scheme, with all its favourable opportunities at a time of much unemployed labour, is a typical case of this repressive struggle (see the remarks of *The Times*, 23rd July, 1885). Of course objections must be heard and duly considered; but the method is altogether at fault. Is the parliamentary block, for instance, irremediable? Mr. Chamberlain indicated lately the solution principle in ready printed answers to the multitudinous questioning of the House. Printed instead of spoken discussion insures the command of time, and the simultaneous passage, when necessary, of any number of measures. Those, at least, of general progress and non-party bearing might be thus methodically and economically dealt with; and the parliamentary machine be practically open to all, free alike of deterring expense and unnecessary delay.

My special subject of sanitary reconstruction and rehousing, and that by way of an ordinary business enterprise, requires some still further facility-giving and obstacle-removing. I suggest the passing of a general Act, under which any company or trust might be constituted and adequately empowered upon satisfying the Government as to its objects, and its adequate resources and responsibility. I will briefly indicate the chief points of such an Act, as well as the controlling power to be exercised by the Government. In trying to remove all needless preliminary difficulties that prevent urban improvements, we must also, of course, adequately guard from injurious or needless disturbance the many interests, personal and general, that may be involved in such questions. My chief aim is to establish a London Reconstruction Trust of such adequate responsibility and capital-guarantee, as the Government

would not hesitate to deal with as proposed, and to explain how the Trust is to be managed and worked for the general good as well as for its own objects and advantage.

Only in this facilitating way can we hope for some such Trust, directed by our leading business men, in order to give it adequate responsibility. After offering the prizes here alluded to, I took some steps towards establishing such a Trust for the proposed London reconstruction. But after an effort, for about a year, with the spare time I could afford to keep the matter before the public, I had to abandon it, the project seeming to me impracticable under present conditions. Our leading business men might be induced to give their time to any feasible and interesting project of the kind for the public good; but they could not be expected to encounter all the obstacles, uncertainties, and fathomless expenses they might find in their way. If I had succeeded with London, the road might have been opened for a like Trust being constituted for possibly every one of our larger towns, such of them at least as had sufficient of the element of progression to insure an effective "natural increment" of site value for the ultimate recoupment. I regretted that such a Trust had not been in readiness for Sunderland, for example, to take due advantage of the depressed times there and the unemployed labour all about for the past year or two. Such bad times are the very life of my reconstruction projects. Expedition with the work is a chief element of success in minimising compensatory claims, and the staff of labour for that purpose may be so large as hardly to avoid, except in such unusual depression, the disturbance of other concurrent industry. I shall now sketch out my proposed General Act of Parliament for promoting urban sanitation and reconstruction, and also the constitution of a Company, or Trust, for carrying out the work as a self-remunerative business enterprise.

A General Act towards promoting Sanitary Reconstruction and Rehousing in London and the Larger Towns, as a Self-remunerative Business Enterprise.

That the Government be authorised by Parliament to confer full and prompt powers of action upon any company, or trust, satisfactory to it as to objects, resources, and responsibility. That the powers are for buying, on equitable terms, any ground for reconstruction and improvement purposes, and for holding such ground for such term of years (say, not less than thirty), as may assure an adequate natural increment of value towards final recoupment of outlay. That both the Government and the Municipality be represented in the management, and that no step be taken without their concurrence, or against their veto, the Government being final arbitrator in any difference. That in view of the Trust borrowing money in addition to its capital, a contingent rating liability may be conceded to its loan issues, so as to reduce their interest charge to the Trust, while the Municipality's liability may be regarded as only nominal, by intervention of the Trust's supposed adequate capital and effects. That under such concession, if made, a fair dividend or divisible profit to the Trust be matter of agreement with the Government.

Constitution of a Joint Stock Company, or Trust, as proposed, for undertaking the Sanitation and Reconstruction of Overcrowded and Unhealthy Sections of London.

That the capital be not less than £10,000,000.

That it be raised in the least exacting form, say £1,000,000 to be paid up, the rest being liability.

That in view of the best chances for a responsible, intelligent, and comparatively permanent shareholding, the shares be of exceptionally large amount, say of not less

than £1,000, perhaps of £10,000 each, with a limited maximum holding to each shareholder, thus constituting a Trust of many substantial persons, adequately interested in the enterprise.

That a fair remuneration might begin with 6 per cent on the paid-up capital, together with 1 per cent on the liability. While this would give as much as 15 per cent, reckoned solely on the former, it would be but 1½ per cent, reckoned on the whole necessary capital of ten millions. The success of the work, as it proceeded, might warrant increase of dividend. If the Trust could dispense with the contingent rating privilege, it would, of course, have a freer right to such increase.

I have thus attempted to supply facilities and remove obstacles as regards a section of enterprise which, although forming as yet hardly any part of practical business, appears to me destined to a great future, when the "natural increment" feature is better understood and practically applied. There is hardly one of our larger cities or towns but stands in sore need of sanitation and reconstruction, at least in its central and oldest sections, which, like those of London, have become altogether inadequate to the wants of the modern growth. Heretofore such improvement of any general, or systematic kind, has been everywhere restricted, if not totally prevented, by its costliness to the ratepayers. I have endeavoured to show how all such cost may be avoided; how the outlay may be all recouped as a business enterprise, so as to give free play to a progress so necessary to health, comfort, and business convenience. In effecting this result, by holding for a term of years, instead of at once reselling the necessary expropriations, the best method of procedure may be left to the adequate kind of Company, or Trust, which I propose for the work. My object has been to smooth the way for the ready creation of such Trusts, in and on behalf of our larger towns, and I have given, by way of example, the constitution of one such for the case of London. Under the facilities I have suggested, I am not without hope that such Trusts may be formed in all the larger and more

crowded towns, headed respectively by some of the prominent citizens.

Business enterprise, it is often said, is best left to push its own way. But although my project is substantially such an enterprise, it is something higher, as well as of a surpassing public interest, and consequently a Trust of special responsibility is wanted. One company of large resource would therefore be better than the "scratch lots" brought together haphazard for a purely business object. The Government could deal more confidently, in awarding the large necessary powers, with the former than with the latter. My aim, therefore, is to secure one such large Trust for London, directed by some of the prominent citizens.

I will only further remark that in view of the absolute despair which seizes upon many minds at the inequalities of the country's socio-economic condition, and the drastic measures that are often proposed for its cure, I am bold to say that perhaps no cure would be more efficacious or more general than the removal of every needless obstacle, and the supply of every needed facility, for the country's natural business progress, abounding as our country does in capital and enterprise always in readiness for the purpose.

W. WESTGARTH.

8, FINCH LANE, E.C.,
22nd Sept., 1885.

THE

SANITATION AND RECONSTRUCTION

OF

CENTRAL LONDON.

BY

WM. WOODWARD, A.R.I.B.A.: P.A.S.I.

THE

SANITATION AND RECONSTRUCTION

OF

CENTRAL LONDON.

PREFACE.

IN order to meet the sub-divisions into which the Essay is required to be written, I have kept as far as possible to the main Heads as laid down in the Printed Instructions, but to avoid repetition, and the consequent lengthening of the Essay, I have found it necessary to embody many main features of one head under that of another: thus, under the head of "Sanitary Considerations" will be found many provisions and suggestions for the "rehousing of the poorer classes of the Metropolis," while under the same head must necessarily be points of detail which, although properly belonging to Sanitation for the Poorer Classes, would also be appropriate under the head of "Architectural Considerations," and the general suggestions and plans for the "Reconstruction of the Central part of London" must embody and contain the "Engineering Considerations," the "Architectural Con-

PAGE

Mortuaries 83
Gymnasia, Public Swimming Baths, Public Libraries, Technical Schools, &c. 84
Open Spaces 84
INADEQUACY OF MACHINERY FOR EXECUTING ACTS . . 89
CONCLUSIONS 102
THE ARCHITECTURAL CONSIDERATIONS 104
THE ENGINEERING CONSIDERATIONS 119
THE SANITATION, STREET RE-ALIGNMENT AND RECONSTRUCTION OF THE CENTRAL PART OF LONDON 120
DESCRIPTION OF THE DRAWINGS 128
Drawings No. 1 128
" " 2 136
" " 3 138
THE FINANCIAL ASPECT OF THE SCHEME 141
THE METHOD OF CARRYING OUT THE IMPROVEMENT . . 146

INTRODUCTION.

London before the Great Fire.

IN a practical Essay on such a subject as this, it will not be necessary to enlarge upon the origin or foundation of the City, but it may not be out of place to briefly consider what London was immediately before and after the great fire of 1666; what it is in this year 1884, after the exertions of its constituted authorities; and then what it might become by the improvements suggested in this Essay.

A glance at a plan of London of even fifty years ago, shows the enormous strides which building operations have made in spreading the area of this great Metropolis; indeed, the surprise is almost as much as that which is felt in comparing the London of Queen Elizabeth, with that of Queen Victoria. In the reign of good Queen Bess, what was field and garden, is now an almost solid compact mass of human habitations; then, with the exception of a few buildings dotted here and there, all was open space from Lothbury to the Tower. Whitechapel consisted of a few houses only: Goswell Street was called the "road to St. Albans:" with the exception of Cowcross and part of St. John's Street, Clerkenwell was chiefly occupied by the Monastery and Church: from the back of Cowcross to Gray's Inn

Lane, pasture and garden ground held sway, as it nearly did to the "Village" of St. Giles, which had then good right to be called "in the parish of St. Giles *in the Fields*."

Beyond to the Northward and Westward all was country, "Oxford-road" having trees and hedges on both sides. Even in 1778 a German writer, describing the Metropolis, speaks of Tyburn (the place of Execution at that time) as being "distant from London about two English miles;" and the same might have been said with equal truth, of surroundings of equal distance, at other points of the compass. The Strand then was, on the South side, formed of the Mansions of the Nobility and Prelates, the gardens running down to the Thames, on whose (perhaps then silvery) waters Barges carried their noble owners to the Court at Whitehall.

On the Surrey side of the Thames, there were but six or seven houses from Lambeth Palace to the shore opposite White Friars; opposite to Queenhithe were the circular buildings appropriated to Bull and Bear Baitings, which Elizabeth often witnessed. London Bridge was crowded with buildings, along Tooley Street to Horsleydown was much built over, and after that only a few houses and gardens appeared. When the Earl of Burlington was asked "why he built his house in Piccadilly so far out of town," he answered, "because I was determined to have no building *beyond me;*" and the authorities in the days of Elizabeth betrayed curious anxiety to prevent the increase of buildings beyond *them*, by which means they thought to check the growth of a population which might be inconvenient; and, strange to say, under the Commonwealth a similar proclamation was issued, with the reservation, however, that the Earl of Bedford might build Covent Garden, and that Long Acre, Lincoln's Inn Fields, and Clare Market, might force themselves into existence. The result

of such proceedings might have been anticipated; it was easier to check the growth of buildings than it was that of the population; the houses of the poorer classes were therefore crowded to such an excess that disease and pestilence several times occurred. In 1603 upwards of 30,000 persons died of the plague in London; the authorities were alarmed, all precautions were useless, at last the building area was extended, and *extension* has been the word ever since.

In the reign of Charles the Second (1660) the Sanitary condition of the Metropolis must still have been a subject of anxiety; the attention of the Legislature was directed thereto, and Acts for Paving and Lighting the Streets, and widening the Avenues, were passed. These, however, did not prevent, in 1665, the "great plague," which carried away 100,000 souls; a dire calamity followed by an effective cleansing in the form of the outbreak of the "great fire," on Sunday, September 2nd, 1666, which consumed, within the walls, almost five-sixths of the whole City, or equal to upwards of a mile in length, and half-a-mile in width. The ruins of the City were 436 acres, viz. 373 acres within the walls, and 63 in the liberties of the City; of the 26 wards it utterly destroyed 15, and left 8 others shattered and half burnt; it consumed 400 streets, 13,200 dwelling houses, 89 churches, besides chapels, 4 of the City gates, Guildhall, many Public structures, hospitals, schools, libraries, and a vast number of stately edifices, and according to the best estimates which could be made, the value of the property destroyed amounted to £10,000,000. sterling.

London after the Great Fire.

If ever a golden opportunity was lost, it was when, through blundering which I shall show similarly exists at

this day, the rebuilding after the devastation caused by the fire, was permitted to be carried out regardless of any systematic plan commensurate with the exigencies of so important a City. It is true that an Act of Parliament was passed for the rebuilding, but it would appear to be easier to pass an Act, than to secure skilful compliance with its intentions. Of course, more regularity existed in the new than in the old line of thoroughfares, and the dwellings were more healthful and commodious; what was in addition wanted was certainly at hand, but an obtuse authority pooh-poohed, as it would pooh-pooh to-day; Sir Christopher Wren's grand scheme was set aside, the foundations of an intricate plan were laid, complication upon complication ensued, and London is now the inconvenient network of thoroughfares which the absence of any adequate controlling authority has permitted it to become.

It will be interesting to notice here the scheme which Wren had laid down for remodelling London. The plan, which was published in 1724, entitled "A Plan of the City of London after the Great Fire in the year of Our Lord 1666 with the Modell of the New City according to the Design and Proposal of S^{r}. Christopher Wren, K^{t}. &c. for Rebuilding thereof," embraces an area of about 1,500 yards lineal by 3,500 yards lineal, the former from the banks of the Thames to Clerkenwell (North and South), the latter from Lincoln's Inn Fields to the Tower (East and West), and is explained as follows—

"From the remaining part of Fleet Street which escaped the Fire about St. Dunstans Ch: a streight and wide Street crosses the Valley, passing by the S. side of Ludgate, and thence in a direct line through ye whole City terminates at Tower Hill; but before it descends into the Valley where the great Sewer runs, it Opens into a Round Piazza, the Center of Eight-Ways, where at one

Station we see (I) straight forward quite through the City: (II) Obliquely towards the Right Hand to the beginning of the Key that runs from Bridewell Dock to the Tower: (III) Obliquely on the Left to Smithfield: (IV) streight on the Right to the Thames: (V) streight on the Left to Hatten Street and Clarkenwell: (VI) streight Backwards towards Temple Barr: (VII) Obliquely on the Right to the Temple Garden: (VIII) Obliquely on the Left to Cursitors Alley. Passing forward we cross the Valley, once sullied with an offensive Sewer, now beautified with a usefull Canal, with wharfs on each side passable by as many Bridges as streets that cross it. Leaving Ludgate, this great street presently divides into another as large, which carries our Eyes and Passage to ye Front of the Exchange, and before these two streets spreading at acute Angles can be clear of one another, they form a Triangular Piazza, the Basis of which is filled by the Cathedral Church of St. Paul. But leaving St. Paul's on the Left, we proceed as our first led us towards the Tower. We return again to Ludgate, and leaving St. Paul's on the Right hand, pass along the other great Branch to the Royal Exchange; seated in the Place where it was, but free from Building, in the Middle of a Piazza included between Two great streets, One from Ludgate leading to the South Front, and another from Holborn over the Canal to Newgate, and thence streight to the North Front, &c. Instead of Ludgate-Prison was Designed a Triumphal Arch to the Founder of the New City, King Charles the Second."

The above description, even unaccompanied by the plan, shows the grand conception of its so highly talented Author, it shows the grasp he had of what was essential for the dignified outlay of a City he has done so much to embellish, and the plan and description remain a monument of the shortsightedness of the authorities in those days, who

appear to have thought of little else than a rapid covering of an area so rapidly cleared, for we learn that within little more than four years the City was principally rebuilt.

In the reigns of Charles the Second and James the Second many of the large houses of the nobility in the Strand were pulled down, and some further extension of the "suburbs" of the Metropolis took place by the settlement of upwards of 13,000 French Protestants in Long Acre, Seven Dials, Soho, and Spitalfields, their avocations being chiefly ornamental jewellery and silk weaving.

During the reign of William and Mary, the Metropolis greatly expanded, particularly to the West: St. Giles' and St. Martin's in the Fields becoming then incorporated with the Capital, which began then to approach the yet distant Village of St. Marylebone. In the reign of Queen Anne, an important addition was made to the edifices of London by the erection of fifty new Churches, and it is well to note that the cost of these churches was defrayed by a small duty on Coals brought into the Port of London.

About the middle of the Eighteenth Century power was given to the Corporation to make such alterations in the Avenues leading to the City as it might think necessary; and although beneficial alterations were made, nothing of adequate extent was accomplished, and it may be said, as a general remark, that, with few exceptions, no just appreciation of the urgency of alteration in the old, and strict supervision in the lines and widths of the new, thoroughfares, was shown until about the middle of the Nineteenth Century.

Before I proceed to consider London as it is to-day, I will pause to note that it was not until the reign of Queen Anne that Party walls were directed to be made either of brick or stone. In the reign of George the Second, a General Lighting of London by Parish Assessment was adopted, and

soon after a new mode of Paving commenced, previous to which few of the streets had level footpaths for passengers, but were formed with small stones, and for the most part with a gutter down the middle. At this time also an Act of Parliament was passed for removing the enormous Signs, &c., which hung across the streets.

LONDON AS IT IS IN 1884.

In using the word "London," I intend it to include, not only the City and its Liberties, but Westminster, Southwark, &c., together forming the Capital of the British Empire.

London possesses, in a high degree, those natural advantages which are real blessings to its inhabitants. The soil, taken generally, is all that could be desired for healthy occupation, while it affords, at the same time, material, which no doubt accounts for the extensive employment of brick in its edifices. The Southern side of the Grand River which, properly cared for, would supply good water, and constitute the great medium of commerce, is uniformly flat, but the Northern side is of gentle slope, and, with the buildings following the natural bend of the River, forms an imposing amphitheatre from East to West, offering facilities for architectural effect, which cannot be surpassed, if equalled, in any other City in the World.

The rapidity of the growth of London is startling: in the reign of George the Fourth (1825), it was computed to contain 160,000 houses, now it contains about 600,000. In 1801, the population numbered 959,000; in 1821 it numbered 1,263,595; in 1871 it was 3,883,092; and now it is about 4,000,000, and appears to increase at the rate of about 20 per cent. every ten years, standing out, as regards extent, in bold contrast to Paris, which, according to the Census of

1881, contained only 2,239,928 inhabitants, and 68,126 houses.

The rateable value of property in London is now £28,000,000, having increased nearly fivefold in the last 43 years.

The government, therefore, of such a City as London, is of the first importance, and, as it might be considered out of place here to enter into any political question as to its efficiency or non-efficiency, or whether it is or is not managed by too many authorities, I will content myself by noting the system or systems by which it is controlled, at the same time bestowing upon the various Departments those criticisms which would, I think, help forward the work of Improvement.

THE CORPORATION.

The Municipality of the City is elected from, and governs its district in the Centre of London, at an expenditure of about £1,000,000 a year. The Corporation may be said to entirely control itself and its belongings: it has its own Police Force, it Paves, Lights, Cleanses, Waters, and Drains the Streets, commands all Sanitary matters and has power to levy rates. It has very extensive Estates, and many useful functions devolve upon its government—amongst which may be mentioned the Markets, the Library, the City of London School, besides Law, Parliamentary, and City Courts.

Very large funds are available in the City, and these are expended in education, relief of the poor, and in many other public and private ways. It claims a monopoly of Fish and Meat Markets, taxes Grain and Coal coming into London, and has a total rateable value of £3,500,000. A walk in the City will show that although there is, in many

particulars, room for improvement, the visible matters coming under the control of the Corporation are, with the exception of the thoroughfares, in very fair condition.

Besides the acquisition of Epping Forest for the People, and other improvements carried out by the Corporation, there is that great and valuable work which eclipses, perhaps, as regards usefulness and completeness, any Improvement yet carried out in London—I refer, of course, to the Holborn Viaduct—and those who remember the lamentable wear and tear of Horse and Man, in the days of Holborn Hill, cannot but place this work of the Corporation as first in the list of valuable scientific and practical undertakings.

THE METROPOLITAN BOARD OF WORKS.

This important Body was called into existence by the Metropolis Local Management Act of 1855. It consists of 45 Members elected by the Members of the various Vestries and District Boards of the Metropolis. It controls the Main Drainage, Open Spaces, Bridges, Fire Brigades, Artizans' Dwellings, Buildings, Street Improvements, Offensive Trades, and other matters outside the City, and some inside the City. The great and successful achievements of the Metropolitan Board are the Thames Embankment, and the Main Drainage. The annual expenditure of the Board is from £2,000,000 to £3,000,000.

THE VESTRIES.

The Vestries and District Boards were also constituted by the Act of 1855. There are in London 23 Vestries and 15 District Boards, controlling the Paving, Lighting, Cleansing, Dusting, Watering and Minor Drainage. These

Bodies elect the Members of the Metropolitan Board, being themselves elected by the Ratepayers; they carry out all the details of local administration, the inspection of all unhealthy premises, the analysis of all food sold, with the control of everything affecting the health of the District. They possess also power in the Establishment of Baths, Wash-houses, Libraries, Mortuaries, and other matters. The Vestries have Rating power, their expenditure is about £2,000,000 per annum, and, taken generally, it will probably be conceded that the work of the Vestries is fairly carried out. It may sometimes strike one as peculiar that the roadways and footways of London should be of so many varieties: that after enjoying a drive on one kind of metalling which seemed to meet all reasonable requirements, we should be suddenly jolted on to a roadway which met none of them; that whereas one length of roadway is covered with Asphalte, its neighbour is paved with Macadam, or Flint; that the products of far removed Northern climates in the shape of Wood pavement, hustle the hard productions of our nearer Northern Aberdeen, or hard, but blushing, Mount Sorrel. Equally it is matter for remark that, whereas one roadway carries us along on its broad even back as smoothly as does the iron way, another seems intent on showing how solicitous it is to store water in little pools, providing at the same time for an active industry in the repair of rolling-stock. So, too, the footways:—hard tooled York, Asphalte, Gravel, and Victoria and other Patent Stones, all receive the foot of the pedestrian in a walk of a mile, and similar divergence of opinion as to what constitutes proper repair appears to worry the worried mind of the Vestry Surveyor in the matter of footways, as it does of roadways. What subject is there, then, for surprise if one Vestry considers its duty to its constituents fulfilled by clearing away Snow from the streets within a

few *hours* of its fall, whilst another sets its mind at rest when it has cleared it away in a few *days*, and then only because the temperature has not been kind enough to anticipate its action by that Thaw so dear to the heart of the Contractor, whose contract was so carefully and stringently worded as to clearance of Snow immediately after its fall. Then one practical body of men considers that the metalling of roadways is injured by too copious a supply of water, even during the hot, dusty days of July and August, whilst another allows the water to be thrown on in such a manner, that the roads are almost impassable on account of the thereby created Mud.

As for Dust, it sometimes happens that its removal can be secured by the mere exhibition of the capital letter D, or by a verbal communication to the Dustman; sometimes it cannot be secured without the exhibition of the monetarily small, yet capital *d*, or without a sharp note to the Sanitary officer of the District.

WATER SUPPLY, ETC.

The Drainage of Houses and Surfaces, the supervision of which is in the charge of the Vestries, and the supply of Water to the Metropolis, I propose to speak of under the head of "*Sanitary Considerations*,"—under which head I propose also to enlarge upon the details of Cleansing, Watering and other matters of Sanitary Administration.

BOARDS OF GUARDIANS.

Other principal Bodies acting for the welfare of this vast Metropolis, are the Boards of Guardians, of which there are thirty, controlling the Workhouses, Dispensaries, Medical

Out-door Relief, and the Relief of the Poor generally, and it may be here noted that the Poor Rate levied in London exceeds £2,000,000 per annum.

METROPOLITAN ASYLUMS BOARD.

The Metropolitan Asylums Board controls the erection and maintenance of Asylums and Hospitals for the imbecile poor, and those afflicted with contagious disease. There are twelve such Institutions, with accommodation for about 7,000 patients.

SCHOOL BOARD.

The School Board for London, which consists of 49 Members, is a direct representative Body, elected by the Ratepayers of the ten School Board Divisions, controlling the Education requirements of the Metropolis.

POLICE.

The Maintenance of Public Order and Security, the inspection of Cabs and Omnibuses, the issue of Licences to Drivers and Conductors, the inspection and registering of Common Lodging Houses, and other duties, come under the control of the Metropolitan Police, of which, exclusive of the City of London Police, there is a total force of all ranks, of nearly 11,000 men.

THAMES CONSERVANCY BOARD.

The Thames Conservancy Board controls the waterway of the Great Metropolitan River, providing for the scavenging of its surface from impure matter.

LEA CONSERVANCY BOARD.

The Lea Conservancy Board exercises similar control with respect to the River Lea.

LIGHTING.

Lastly, London is artificially illuminated, principally by Gas—Electric Lighting is making way, but apparently not sufficiently to disturb the equanimity of the four Companies who divide among them the supply to the Metropolis. The Metropolitan Board has the power only to test the *quality* of the gas supplied.

It is said that the Illuminating Power in London is equal to 16 candles, and the Metropolitan Board appears to be satisfied that the quality is up to the standard required by Act of Parliament. What sort of candles they may be to which the illuminating power of the Gas supplied is equal, I shall not venture to surmise, but I will say that the so-called Illuminating power, as supplied to the Public Lamp Posts, is in many instances very falsely so called. A lantern frame, constructed so as to throw a fitful, dim, religious light, in a direction where it is least required, filled in with dirty broken glass, supported by a badly designed, lean and lanky post which is nearly always out of the vertical, and very often occupying a valuable part of the footway, is practically the order of things in London, and if the Metropolitan Board is satisfied with the quality of the Gas supplied, the standard required by Act of Parliament must be an exceedingly low one. The Gas is very often the reverse of good, and at times that even is partly denied us in our own dwellings, by an insufficient supply.

THE SANITARY CONSIDERATIONS.

HOUSE DRAINAGE.

Probably no subject has arrested Public attention with greater force during the last ten years or so, than that which comes under the generic term *Sanitation*. A great deal of the interest which has been, and is being taken in that subject, is the result of a mild form of Panic, and there have not been wanting those who are generally at hand, ready to respond to such situations, by encouraging the dread, in this case putting forward every conceivable form of apparatus warranted to remove the ground of the fears, and to convert what they had termed a "pestilential hole" into a model dwelling charged with nothing so much as pure and fresh air. Men have sprung up dubbing themselves "Sanitary Engineers," who yesterday hardly knew the difference between a drain pipe and a red ware chimney pot; they talk for the hour on traps, ventilating pipes, cowls, disconnectors and valves, they make horrible pictures and exhibitions of old lead D traps and iron containers, they get into your houses with their crude and experimental ideas, they describe and order with vehemence one day what they countermand the next, they fill your corners with pipes the use of which they are not quite sure of, and which certainly nobody after them will ever understand; and when a sum of money about equal to that which was expended on the erection of the house has been paid, they will leave the unhappy owner to discover, shortly after, that the ideas as to ventilating pipes and other sanitary notions, which have cost him so much to attain, are already obsolete, and

that if he wishes to place his house in exact accord with the real sanitary scientific discoveries of the day, he must begin "de novo."

Not only "Sanitary Engineers" however, but "Professors of Sanitation" have sprung up, whose word is regarded with as much awe as that of a Physician in a case of life and death. These men (I am not at all referring to those few Professors who have devoted themselves to questions of Sanitation, and who have a real knowledge of the subject) use words more high-sounding than the "Sanitary Engineers;" "smell" they convert into "*gas*" and the word "germ" will be found to be one in their vocabulary of which they make pretty good use. These are of course the *humbugs* of the day—and are not to be confounded with the earnest workers who, without show and at half the cost, do all that is necessary to make a house healthy. In speaking of earnest workers in Sanitary matters, it is impossible to avoid mentioning the name of S. Stevens Hellyer, whose publications on Sanitary Plumbing are real "text books" for all, as they have been the reference books of some of those who having perused and prigged, set up as Professors of Sanitation, proceed to mutilate, and ultimately to murder, the practical ideas set forth, in works, the execution of which, from want of knowledge, they are unable properly to direct.

Now it cannot be too strongly impressed on the Public mind, and especially on that large contingent of the dwellers in this Metropolis whose purses are not always filled to the brim, that to make their houses fairly safe from dangerous inroads of sewer gas, as it is termed, is not by any means a gigantic undertaking. In the case of a new house an Architect of ordinary professional capacity is quite alive to the modern ideas of Sanitation, and he will no doubt see that, so far as his client permits him, all that is proper to be done

is thoroughly carried out—he has all the ground before him, he can see if he likes that the drains are laid and jointed as they should be, and generally dictate exactly the Plumbing items of Sanitation. The difficulties, however, which beset an Architect (and I say *Architect* because "Sanitary Engineers" and "Professors of Sanitation" are not by any means necessary) become apparent when he has to deal with an old house, the drains of which he knows nothing whatever about; but even here the task of securing safety from poison from the sewer is not such a very hard one.

Take an ordinary street house, open at the front and back, but closed in on either side by party walls. The W.C. apparatus is of the old kind, set in an apartment in the centre of the house, without any communication with the open air. The sink waste is directly connected with the drain, supposed to be protected by an old bell trap, which is of little use, the cistern has the old standing waste pipe also directly connected with the drain, and serves the sink as well as the W.C.—the rain-water pipes are also directly connected with the drains, which run under the Kitchen floor or Basement passage, and uninterruptedly on to the old iron flap trap, which, if it exists, is the only opposing force to direct contact with the main sewer which runs along in front. Now this is, apparently, a very alarming state of things, to be remedied only, the Professor of Sanitation would say, by the removal of pipes, cisterns and apparatus throughout the house, involving perhaps the dislocation of everything in it, and the substitution of the network of arrangements which I have previously referred to. I am not for one moment urging any objection if the client is willing to carry out these elaborate notions and can afford to pay for them; but I speak for the larger class, and tell them that the following will, in ordinary cases, be sufficient to arrest danger, supposing that the W.C.'s, Sinks.

and Cisterns, are in a proper state of repair, and that there is not any stoppage in the drains or other pipes.

Take up the paving of front area where the main drain runs through to the sewer, cut out a length or so of pipe and build, in 9 in. work, a shaft 3 feet by 2 feet, render it all over inside in Portland Cement, at the bottom let in a half drain pipe, and at the sewer side fix a Weavers' or some other syphon trap, connect with the shaft two 4 in. drain pipes, one on either side of the shaft, or carry up a 4 in. galvanized iron pipe a short distance to form inlets, and if the rain water pipe is near at hand caulk the joints, connect it with the shaft, carry it well up above the roof, and treat it as the outlet ventilator; if one is not near at hand, carry up, well above the roof, a separate 4 in. galvanized iron ventilating pipe. Cover the shaft with a York stone, or Iron, cover, and the drain job is done. As regards the Water Supply—well clean out the Cistern periodically, say once a month—and there will not be much to fear in that direction. Now this is all well and good where the tenant, or lessee, is in a position to carry out even what I have above described, but there is a still larger class who *cannot* expend even a few shillings on such works, and whose landlords *will* not: where not *one* but half a dozen *families* live in one house, the Sanitary accommodation of which is no more for the six than it is for the one. I will now consider, therefore, how far the State has stepped in to remedy this condition of things.

STATE AID TO HEALTH.

It is a very interesting study to note all that the State has done to preserve the health of the dweller in London. I will proceed to give brief extracts from Acts of Parliament now in force, which will show the enormous pains the Legislature of this country has taken from time to time to meet the necessities of the cases as they arose, and to keep pace with the advanced opinions and knowledge of Sanitarians. When these Acts have been perused, it is impossible to avoid the conclusion that, assuming adequate means to enforce their wise provisions, the poorer classes of London have been thought of, and cared for, with a keenness worthy of every praise. This being so, and the wealthier classes having, in combination with the Acts of Parliament, the wherewithal to keep their houses healthy, it will be well to consider if substantial grounds exist for the present outcry for more legislation, and wherein amendment is required.

The Metropolis Local Management Act, 1855, is administered by the Vestries, The District Boards, and The Metropolitan Board of Works, and the following is a selection of the leading Clauses of the Act so far as they affect the subject of this Essay.

> As regards the Sewers—The Vestries and District Boards are empowered under this Act to perform all works which they may consider necessary to the old sewers, and, with the approval of the Metropolitan Board, they may, when they think it desirable, construct new sewers.
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> They (The Vestries and District Boards) are to pro-

vide proper traps or ventilation to prevent effluvia of sewers from exhaling through gully holes, gratings, &c. in any of the streets.

They are to construct the Sewers so as not to be a nuisance or injurious to Health, and to properly clear, cleanse and empty them.

They have power to secure that every house has its drain properly connected with a sewer, if one exists within a distance of 100 feet therefrom.

They have power to prevent the occupation of any house built after the passing of the Act, unless the Drains, Apparatus, and Water Supply are constructed to their satisfaction.

They have power to control the whole system of Drainage and Water Supply of every house from its commencement to its finish.

They have power to control the branching into main sewers.

They have power to perform the branching, &c. themselves, and charge the owner of the house with the cost of the work.

They have power to provide sufficient and proper Waterclosets, Privies, Ash-pits, Water-supply, Apparatus, &c. at the expense of the owner of the house if they think fit, or they can call upon him to do so.

They have power to enter houses and open ground to inspect Drains, Water-closets, Privies, Cesspools, Water Supply, Apparatus, Sinks, Traps, Syphons, Pipes, or other works or apparatus connected therewith.

They have power to inflict a penalty for non-compliance with their directions, and to do the necessary works themselves and charge the offender with the costs.

They have power to provide and maintain Urinals, Water-closets, and like conveniences.

They have power to pave as they may think proper all streets, &c.

They have power to put up Posts or other erections in any Carriage-ways so as to make the Crossings less dangerous for foot passengers.

They have power over the breaking up of pavements, roads, &c., by any Company for works to pipes, and during the months of December, January and February, they can prevent the roads, &c. being taken up for laying down any Water Main.

They control the Lighting, to prevent accident while paving works, &c. are in progress.

They have power to water the Streets as they think fit, and to fix Pumps for the gratuitous supply of Water to the inhabitants.

They have power to cause to be scraped, swept and cleansed all footways.

They have power to appoint and pay Crossing Sweepers.

They have power over projections from houses, and obstructions in the Streets.

They have power over all Hoards and Enclosures.

They have power to cleanse all Streets from Dirt, Rubbish and Snow, and also to cleanse and empty Privies, Cesspools, Sewers and Drains.

They have power to Light the Streets.

They have power to appoint Medical Officers of Health to ascertain and report upon the existence of Diseases, and to point out the most efficacious modes of checking and preventing the spread of such Diseases, as also to point out the most efficient modes for the ventilation of Churches, Chapels, Schools, Lodging houses, &c.

They have power to appoint Inspectors of Nuisances to inspect and report upon the existence of any Nuisances.

The Metropolis Management and Building Acts (Amendment) Act, 1878, chiefly provides for regulating the widths of Roadways and Passage-ways; the Erection and Extension of houses and buildings in proximity to roads, passages, &c.; for the protection of the Public frequenting Theatres and Music Halls, from danger from Fire; and for regulating the making, filling up, and preparation of the foundations and sites of buildings, and the quality of the substances to be used in the formation or construction of the sites, foundations, and walls of such buildings, with a view to their stability, the prevention of fires, and for purposes of health.

The Metropolis Management and Building Acts (Amendment) Act, 1882, empowers the Metropolitan Board to name and number Streets in default of Vestries, &c., complying with the orders of the Board; it also empowers the Board to remove, in case any unauthorized person does not remove when he is called upon to do so, any post, rail, bar, fence or other obstruction or encroachment in, upon, over, or under any Street, when such impedes or hinders the traffic; it gives the Board power to prevent "culs-de-sac," and power over the formation of all streets proposed for foot-traffic only; it gives power to the Board to determine the amount of open space to be dedicated to the use of the Public in front of any building which has, by the consent of the Board, been erected beyond the general line of buildings in the same street; it gives power to the Board to regulate the erection and removal of iron or other buildings of a temporary character; it regulates the open spaces which are to be left at the rear of all new buildings intended to be used wholly or

and for opening out the same for the purposes of Ventilation or Health. It is to provide for the accommodation of, at the least, as many persons of the Working class as may be displaced in the area with respect to which the Scheme is proposed, in suitable dwellings within the limits of the same area, or in the vicinity thereof, and the Scheme, when properly formulated, is to be submitted to a Secretary of State, when the Local Authorities are the Commissioners of Sewers or Metropolitan Board of Works, and to the Local Government Board, when the Authority is an Urban Sanitary Authority, for an Order confirming the Scheme, after which Confirmation, the Scheme may proceed as directed by the Act.

The Local Authority may take down and clear away the buildings upon the Area complained of, and may lay out, form, pave, sewer, and complete all such streets upon the land purchased by them, as they may think fit, but without the express approval of the Confirming Authority they may not themselves undertake the rebuilding of the houses or the execution of any part of the Scheme. In any Cases the Local Authority may grant, due provision is to be made for the maintenance of proper Sanitary Arrangements.

If within five years after the removal of any buildings on the land set aside as sites for Working Men's dwellings the Local Authority have failed to sell or let such land for the purposes prescribed by the Scheme, or have failed to make arrangements for the erection of the said dwellings, the Confirming Authority may order the said land to be sold by Public Auction or Public Tender, with full power to fix a reserve price subject to the Conditions imposed by the Scheme, and to such other reservations and regulations as the Confirming Authority may deem necessary.

Power is given to the Confirming Authority to permit

the Local Authority to modify any part of an Improvement Scheme authorized by the Confirming Act, subject in certain cases to Confirmation by Parliament.

Provision is also made for Financing the Schemes, the Appointment of Arbitrator, the Order of Appeal, and other miscellaneous matter.

The Artizans' and Labourers' Dwellings Act (1868), Amendment Act, 1879, extends the powers of the Artizans' Dwellings Act of 1868 just referred to by provisions for compensation and rebuilding. By this Act the Owner of any premises which have been under the Act of 1868 Ordered to be repaired or demolished, may, within three months after service on him of the Order, require the Local Authority to purchase such premises, Arbitration being provided for in special terms, in case of dispute as to the amount to be paid to the Owner by the Local authority.

If any property acquired by the Local authority under this Act is not within seven years after the acquisition thereof disposed of, the property so acquired may be Sold by Order of one of Her Majesty's Principal Secretaries of State by Public Auction or Public Tender, with full power to fix a Reserve price.

Power is given to the Local authority to make Bye-laws for the regulation of dwelling houses belonging to them under this Act, and other provisions are made, generally on the lines of the Act of 1868.

The Artizans' and Labourers' Dwellings Improvement Act, 1879, directs the Arbitrator appointed under the powers of the previous Acts, to determine what would have been the value of the premises ordered to be dealt with under these powers, if the premises had been in such a condition as to have been a nuisance, within the meaning of the Act relating to nuisances, at the date of the Confirming Order, the object being to deduct from the amount, which

would have been otherwise payable to the owner, the Estimated Cost of the works required to abate the nuisance.

This Act authorizes a modification of any scheme to be carried out under the previous Acts, so far as regards providing accommodation for persons of the working class, which may now be provided in some place other than within the Area, or the immediate vicinity of the area, comprized within the Improvement Scheme.

It also empowers the Arbitrator to determine that *a part* of any premises, proposed to be taken by the Local Authority, can be so taken without material damage to such premises, and to award compensation in respect of the severance of the part proposed to be taken, in addition to the value of that part, without the Local Authority being obliged to purchase the greater part or the whole of such premises. Power of Appeal is given.

The Artizans' Dwellings Act, 1882, makes further provision with reference to the accommodation to be provided for the displaced working classes, and authorizes the Confirming Authority to dispense altogether with the obligation of the Local Authority to provide for the accommodation of the persons of the working class, who may be displaced by their scheme, to such extent as he may think expedient, having regard to special circumstances, but not exceeding one half of the persons so displaced. It also provides for the exclusion (unless necessary for the maintenance of the property in a proper state of repair) of compensation for improvements made to property after the date of the advertisement provided for in section 6 of the Act of 1875. It also limits the proceedings of the Metropolitan Board of Works, under the Act of 1875, to areas containing more than ten houses. In cases were there are not more than ten houses the Local Authority, as defined by the Act of 1868, is to deal with them.

If any building to which the Act of 1868 applies is, in the opinion of the Officer of Health, although not in itself unfit for human habitation, so situate, that by reason of its proximity to or contact with any other buildings, it stops ventilation, or causes such other buildings to be in a condition unfit for human habitation, or prevents other improvements, this Act empowers the Local Authority to pull down the "obstructive building," and acquire by purchase its site.

Where, in the opinion of the Arbitrator, the demolition of an obstructive building adds to the value of adjoining buildings, the cost of demolishing the obstructive building is to be under this Act apportioned on such adjoining buildings, and recovered from the occupiers by levy of Improvement Rates.

When a Local Authority fails to put in force the provisions of the Act of 1868, after the report of the Officer of Health that such is necessary, the Metropolitan Board of Works is empowered under this Act to proceed as though they were the Local Authority in the same manner as they may under section 12 of the Act of 1879. This Act also amends the Arbitration Proceedings as set forth in the Act of 1875.

The Metropolitan Street Improvements Act, 1877, authorizes the Metropolitan Board of Works to make the new Streets and Street Improvements mentioned in the Act, and shown on the Deposited Plans, and which it will not be necessary here to detail, except to note that "Gray's Inn Road Improvement" is mentioned, upon which I have commented in this Essay.

Power is given to the Metropolitan Board of Works in this Act to take, use, hold and acquire Easements over such lands as they may deem necessary for the purposes of the improvements, and for providing space for the erection

of houses and buildings adjoining, also to alter the lines or levels of any of the streets to be dealt with, and to make diversions, widenings, or alterations of lines or levels of any existing streets for the purpose of connecting the same with the works, or of crossing under or over the same or otherwise.

The Board is also empowered to lay out the carriage-ways and foot-ways, and to construct, erect, and provide such vaults, cellars, arches, sewers, drains, sub-ways, and other works and conveniences, as they think proper, for the purposes of the Improvements. The Board is made liable to make good any deficiency in the Land Tax which may have arisen by reason of the exercise of the powers granted by this Act, and is empowered to lease the surplus lands, and to sell the ground rents reserved by such leases, reserving covenants for approval of the houses to be erected. The Board "shall" within ten years after the completion of the Improvements sell and dispose of such parts of the lands acquired as may not be wanted for the purposes of the Improvements, and sell or let for the erection of dwellings for the displaced working classes such portions of the lands as are coloured blue on the Deposited Plans, and may purchase such further lands as may be necessary for the purpose. But if within three years after the acquisition or appropriation of the lands acquired for the purposes, the Board shall have failed to sell or let such lands for the erection of the dwellings referred to, one of Her Majesty's Principal Secretaries of State shall order the said lands to be sold or let by Public Auction or Private Tender, with full power to fix a Reserve price, and on condition that the purchaser erects dwellings for the Labouring Classes.

The Metropolitan Street Improvements Act, 1877 (Amendment) Act, 1882, refers entirely to the manner of

carrying out the Gray's Inn Road Improvement, and particularly as regards the erection of Artizans' Dwellings.

The Metropolitan Building Act, 1855, and the subsequent Acts, relate more particularly to the Constructive details of buildings in the Metropolis, the object of the Act being to prevent as far as possible the spread of Fire. The responsibility connected with the carrying out of the provisions of those Acts rests principally with the District Surveyors, who are elected by, and are under the control of, The Metropolitan Board of Works. Provision is also made in those Acts for dealing with Dangerous Structures.

The Metropolitan Fire Brigade Act, 1865, provides for a Fire Brigade under the control of the Metropolitan Board of Works.

The Lands Clauses Consolidation Act, 1845, provides for the Acquisition of Lands required for Undertakings or Works of a Public Nature, and for the compensation to be made for the same. This Act applies to all Undertakings authorized by Acts hereafter to be passed.

The Lands Clauses Consolidation Acts Amendment Act, 1860, provides for the amendment of the Act of 1845 in regard to Sales and Compensation for Land by way of a Rent-charge, Annual Feu Duty or Ground Annual, and for the enabling of Her Majesty's Principal Secretary of State for the War Department to avail himself of the Powers and Provisions in that Act, for the purchase of Lands required for the Service of the Admiralty or of the War Department, or for the Defence of the Realm.

The Lands Clauses Consolidation Act, 1869, provides for the settlement of Costs of Arbitration, and allows the High Bailiff of the City and Liberty of Westminster to take the place of the Sheriff provided for in the Act of 1845, in all cases of disputed compensation, where the Lands are situate in the City and Liberty of Westminster.

The Lands Clauses Umpire Act, 1883, empowers the Board of Trade to appoint an Umpire when the Arbitrators refuse or neglect for seven days after the request of either party to the Arbitration to appoint an Umpire.

The Public Works Loans Act, 1875, provides for making Loans for the purposes mentioned in the Schedule to the Act, among them being the following, which are more intimately connected with the subject of this Essay:—

Baths and Washhouses.
Improvements of Towns.
Labourers' Dwellings.
Public Libraries and Museums.

Any work for which a Sanitary Authority are authorized to borrow under the Public Health Act, 1875.

The Public Works Loans (Money) Act, 1876, provides for Special Loans, and removes doubts as to powers to advance Money for the special cases mentioned.

THE FOLLOWING ACTS RELATE PRINCIPALLY TO THE CROWN PROPERTY IN REGENT'S PARK, REGENT'S STREET, &C.

The Act 53rd of George the Third, Cap. 62, is a carefully detailed Act for Paving, Cleansing, Watering, Lighting, Watching, and otherwise improving Certain Streets, and other Public Passages and Places in the Parishes of St. Marylebone and St. Pancras, then called Marylebone Park, and now known as Regent's Park—and generally for the removal of Dust from the houses, prevention of Encroachments and Nuisances in the Districts mentioned. Powers are given under the Act to Borrow Money, and to levy Rates.

The Act 53rd of George the Third, Cap. 121, provides for making a more convenient communication from Maryle-

bone Park and the Northern parts of the Metropolis, in the Parish of St. Marylebone, to Charing Cross, and for making a more convenient Sewage for the same.

The Act 56th of George the Third, Cap. 128, Amends the previous Acts, and provides further detailed regulations for the Places referred to. This Act is extended by the 7th and 8th of George the Fourth, Cap. 66, and enables His Majesty to grant small portions of Land as Sites for Public Buildings, or to be used as Cemeteries.

The Act 5th of George the Fourth, Cap. 100, provides for more effectually Paving, Lighting, Watching, Cleansing and Regulating the Regent's Park, together with the New Street from the Regent's Park to Pall Mall, and the New Streets and Improvements in the Neighbourhood of Parliament Street and Privy Gardens, and for maintaining a convenient Sewage for the same.

The Act 6th of George the Fourth, Cap. 38, extends the Jurisdiction of the Commissioners appointed under the last mentioned Act.

The Act 7th of George the Fourth, Cap. 77, further extends the 5th of George the Fourth, and enables the Commissioners of His Majesty's Wood's, Forests, and Land Revenues to grant Leases of the Site of Carlton Palace.

The Act 18th of George the Fourth, Cap. 61, amends this Act.

The Act 9th of George the Fourth, Cap. 64 and 70, further extends the Jurisdiction of the Commissioners acting under the previous Acts, and enlarges the powers of and amends those Acts.

The Act 1st and 2nd of William the Fourth, Cap. 29, authorizes the formation of a New Street from the Strand to Charles Street, Covent Garden, and to widen the North End of Bow Street into Long Acre.

The Act 2nd of William the Fourth, Cap. 56, extends the

provisions of previous Acts to certain other Streets and Places in Westminster.

The Act, 11th and 12th of Victoria, cap. 50 (1848), Empowers the Commissioners of Her Majesty's Woods to remove the Colonnade in the Regent's Quadrant.

The Act, 14th and 15th of Victoria, cap. 42, makes better Provision for the Management of the Woods, Forests, and Land Revenues of the Crown, and for the Direction of Public Works and Buildings.

The Act, 14th and 15th of Victoria, cap. 95, Transfers to the Parishes the Duties defined by previous Acts for Paving, Lighting, Watering and Cleansing certain Places in the Regent's Park and Westminster.

The Act, 57th of George the Third, cap. 29, provides for the better Paving, Improving and Regulating the Streets of the Metropolis, and removing and preventing Nuisances and Obstructions therein.

The Parks Regulation Act, 1872, provides for the protection from injury of the Royal Parks, Gardens, and Possessions under the Management of the Commissioners of Her Majesty's Works and Public Buildings, and for the security of the Public from Molestation and annoyance while enjoying such Parks, Gardens and Possessions.

THE WATER COMPANIES.

The Water Companies are Private Undertakings in the hands of Eight Companies, who supply water to the Metropolis mainly from the River Thames and the River Lea. The Metropolitan Board of Works, under the Water Act of 1871, is empowered to receive Proposals for and, under certain circumstances, to require a Constant Supply. The expenditure of the Companies has been over £12,000,000.

It would appear from the report of Dr. Frankland that since he commenced, in 1868, to analyse the water from the Thames, never had it been so much polluted by organic matter as it was in 1880. Probably it has improved somewhat since that date. The water from the River Lea, Dr. Frankland states, is polluted by organic matter, which has been steadily increasing since 1876, and already in 1879, was unprecedented. The conclusion he arrives at is that the water, both of the Thames and the Lea, is becoming year by year less suitable for Domestic use. The Filtration of River Water does not seem to have had the effect of depriving it of all its impurities, for, according to Dr. Frankland, out of 142,190,971 gallons supplied daily by the Metropolitan Water Companies during 1880, about one-half, or 71,897,776 gallons was sometimes grossly polluted by Sewage Matter, and only about one-sixteenth was uniformly of excellent quality for drinking, whilst the residue, or 61,765,034 gallons is pronounced to have been only occasionally polluted. The Water supplied by some of the Companies from deep wells is stated, however, to have been uniformly pure and wholesome. The large quantity of over 142,000,000 of gallons of water used each day in the Metropolitan Area, is Mr. Robert Rawlinson says, pumped by Engines of an aggregate power of about 13,000 horses, and about half the quantity supplied is stated to *run to waste*—but, in my opinion, this is not all waste, because it answers the very important purpose of flushing the drains and sewers, and no doubt accounts to some extent for the healthy condition of London. The question of the Water Supply of the Metropolis must sooner or later engage the attention of the Legislature—Water is a necessity of existence, and its supply should certainly not be under the control or in the discretion of Private Companies.

It has been estimated that a supply of water for Drinking Purposes, and for the Fire Brigade, could be obtained from the chalk for £6,000,000 sterling, and a duplicate supply, for other purposes, and for Watering the Streets, direct from the Thames for another £6,000,000.

The Metropolis Water Act, 1871, makes Regulations as regards Communication Pipes, Weight of lead Pipes, Stop Valves, Cisterns and Ball Valves, Warning pipes, Screw-down taps, Waste preventing Apparatus, Bath waste pipes, &c.

The provisions of this Act are perhaps generally useful, but probably none were so ill-considered as those relating to Screw-down taps and Waste-preventing Apparatus. The first of these was probably inserted in the Act at the instance of the Water Companies, who, regardless of the very great benefit to the community which arises from a good supply of water in the drains, thought that by securing screw-down taps they would prevent waste of water as well as concussion—instead of that, however, they have rather increased waste of water, because, whereas by the old-fashioned tap, one twist of the fingers shut off the water, by the screw-down tap, several twists are required before the water is completely shut off, the result is that servants and others do not take the extra trouble to screw home the taps, away goes the water, the Companies lose it, and at the same time irritation is caused to the consumer. The second of the mistakes of the Act is the clause which provides that "every cistern shall have an efficient *waste-preventing* apparatus, so constructed as not to be capable of discharging more than one gallon of water at each flush."

Now had the Companies, before allowing this Clause to pass, endeavoured to control the particular water-closet apparatus to be used, they might have secured one which would be effectually cleansed and emptied by the discharge

of the one gallon of water, but as many apparatus are very difficult to empty and cleanse thoroughly, and cannot be so emptied and cleansed by the one flush of the water-waste preventer, the consumer either has to wait till the second and third gallon comes into the water-waste preventer, or else leave matters to take care of themselves, or (what is frequently done) evade the regulation altogether. This unquestionably absurd and insanitary arrangement has, however, been defeated by numerous dodges of Cistern Valves, and other falsely so called water-waste preventers, a proceeding which is connived at, and properly so too, by some of the Companies, so that in most cases sufficient cleansing supply is obtained for Water Closets without the irritation and annoyance which this provision of the Act at first occasioned.

The Water Companies have themselves issued Printed Regulations which are mostly very useful for the guidance of the consumer. Some of the Districts supplied by the West Middlesex Water Works are favoured with a Constant Supply, and the Company states that it is desirable, in such cases, that the water for drinking purposes should be drawn direct from the Supply pipe, rather than from the Cistern ; but it is, in my opinion, safer to provide a small Cistern in case of an accident to the Company's Mains, when, during their repair, the consumer on the constant supply, without a Cistern, would be left without water.

The New River Company publish a list of the names of all Plumbers who furnish proof of their being honest and "capable," and who undertake by written Agreement to do *all* their work in the provision of Water Fittings within the Company's district, in strict accordance with the Regulations made under the Act of 1871 and the Company's own requirements, with the understanding that on any breach of such Agreement by any of the Contracting

Plumbers, the Company will strike off the name of such defaulter from the list, and will publish the fact of their having done so.

This is a very good and useful system to adopt, and all consumers should be grateful to the Company for having initiated it.

THE GENERAL AMENDMENTS NEEDED.

We have now, I think, quite sufficient data to enable us to consider how, combined with the State Aid just set forth, the condition of London, especially with regard to the health of the poorer classes, may be improved, and to set forth the reasons why, with all the Powers now at our command, London is not better cared for than it is.

DRAINS.

The Metropolitan Board of Works has provided good Main Sewers, and that being so, the first point to consider will be the Drains running into them.

Fortunately, Drainage into Cesspools may be considered as now obsolete in London, but it would be too much to assert that Cesspools do not now exist. Probably many a good old house has its old Cesspool full to the brim at this moment, disused and hidden away under its passage or cellar floors, throwing off smells which are sometimes attributed to other causes. Only a few years ago I had to investigate the cause of a horrible smell which arose from the Basement of a house in the Regent's Park, and, on opening up the Passage, I found the old brick barrel drain quite full of solid matter; the Cesspool, which was under the paving of one of the front Vaults, had not been emptied for years, indeed, its existence even was not known, therefore when the drain-inlet level was reached, it only became a question of time to fill the brick drain itself, and thus arose the horrible smell which led to my visit. This is a

condition of matters which exists, no doubt, in perhaps a little less *full* form, in hundreds of the best houses in London, and shows the necessity, in any clearance of sites for new buildings, that the whole of the sub-soil, to a level which would with certainty be below an old drain, should be cleared out, because, when the system of pipe drainage came in force, and connections were made with the new sewers, many of the old Cesspools and brick drains were left as and where they were, to avoid the cost and trouble of clearance. Another case which came under my notice, but this time at the East end of London, disclosed the fact that a pipe drain from the Privy in the back yard was not, nor ever had been, connected with the house drain at all: it discharged under the yard ground about three feet from the privy, and about three feet from the back kitchen window, where the soil had soaked into the ground and found its way where the earth was most friendly. In the same house I found that a pipe drain ran under the floor of kitchen, and that the joint of two lengths had never been connected at all, the lower edge of the pipes touched, but the upper part showed at the top an opening of two inches, with a result which can be imagined; the unfortunate residents of the kitchens were always ill, and just before I surveyed the drains, a poor woman had died of Typhoid fever. These are only two examples from my actual experience, but many others of a similar character could be mentioned.

Unquestionably constant supervision during the laying of drains is most essential, and the following points should always be observed:—

1. Care should be taken that all old drains and cesspools, and all soil which has been in contact with any old brick drains or cesspools, be removed from the premises.

2. Large drains should be avoided. It has been proved, beyond all doubt, that matters easily carried away by the increased velocity gained by using a small drain, remain as an obstruction in a large drain. As a rule, branch pipes 4 inches in diameter, either for soil or surface water, are sufficient for any ordinary house, and where they come into the length of main drain before entering the sewer, 6-inch pipes are of ample diameter.

3. Care should be taken that the joints of the pipes are carefully cemented or clayed-in *all round*, and that not the least particle of cement or clay is allowed to remain on the inside of the pipes, as, when it is hard, an obstruction to direct flow arises, gradually increasing until at last the drain is stopped up, or else foul matter remains in the drain, which must in time make itself felt.

4. Junctions should never be made at right angles with the drains, as by this the flow of sewage is directed with velocity against the surface of the pipe immediately opposite, and the risk of accumulation there is very great. Junctions should always be made at a gentle curve or bend with the length of the pipe.

5. Uniform and regular fall should be secured—not too great a fall, because that rapidly carries away the liquid soil, whilst the solid sometimes remains, and the liquid passes over it, causing serious consequences. In some cases old drains have been found laid to reversed inclinations, showing the care required in superintending drain-laying.

6. The joints of all pipes should be socketted, and care should be taken to give the pipes a full bearing on the foundation, and not allow the bearing to be only on the socketted joint. To this end channels

should be cut in the foundation, at every length of pipe, to allow the projection of the socket to rest in them.

7. All drain pipes should be laid on a solid bed of concrete, or else on well-tempered clay puddle, formed to suit the shape of the pipe.

8. All traps in drain pipes should be earthenware syphon traps, with inlets and covers, so laid and constructed as to be ready of access for cleaning out.

9. Special traps—grease traps—should be provided in connection with all scullery sinks, so constructed and laid as to be ready of access for periodically removing the accumulation of grease.

10. Wherever possible, drains should be laid outside the house, but, when this is not possible, the line and direction of the drain should be indicated on the floors by the material being laid, in line of drain, of sufficient width to obtain complete access to the drains when required. If the floor is of wood this can be done by laying the boards between fillets, and fixing them with screws, so that they may be taken up without destroying the floor boards. If the floor is of stone, a tooled York margin (slips of paving laid on edge), could be laid, on each side of the stones, representing the trench where the drains are laid. This would save great trouble in after years, when otherwise, all knowledge of the position of the drains is lost.

11. It is desirable for the important part which *flushing* has to play in all systems of drainage, that the waste water from sinks, baths, rain-water pipes, &c., should be allowed to pass down the house drains. It has now become the fashion, in some quarters, to lay down two distinct lines of drains—one for the

soil, the other for the water from rain-water pipes, sinks, &c., but the evil of this is apparent when it is borne in mind that very little water accompanies the one emptying of a water-closet apparatus, and that, therefore, there is great danger of soil remaining in the drain pipes, an evil which is avoided when the other large bodies of water are conducted into the drains.

12. Wherever a junction of pipes occurs, there should be constructed a brick shaft, say 3 feet by 2 feet, with a stone cover, to allow of access to it, so that rods may be passed up and down the drains in case of stoppage.

13. Before the drain enters the sewer, and outside the house, there should be constructed a brick shaft 3 feet by 2 feet, with stone or iron cover, with syphon trap on the sewer side of the shaft, with inlet ventilating pipes, and outlet ventilating pipes, as previously, and more fully, described herein.

VENTILATION OF DRAINS AND SEWERS.

The question of ventilating drains is now pretty well understood, and I observe that at a Meeting of the City Commission of Sewers held on the 23rd of September 1884, it was resolved that, in all instances where new houses were being erected, the Commissioners of Sewers should place themselves in communication with the builder or the owner, and treat with him for the construction of a proper ventilating shaft for the purpose of ventilating the sewers, carrying the shafts well over the adjoining roofs.

This resolution shows, at least, a very laudable desire on the part of the Commissioners of Sewers to do all in their power to improve the health of the City under their charge;

but I fear that this question of ventilation has hardly been considered with sufficient reference to one phase of it, and that is, what will the effect be upon the health of the Metropolis, if each house has its ventilating pipe discharging over the roof, high or low as the case may be, and the Main Sewers remain as they are without additional ventilation? It must be borne in mind that the main sewers, although very good, have constantly added to them the results of the great increase in the population, and that additional ventilation of the sewers does not appear to be in progress, or to be contemplated. That being so, it may be feared that, although by care in the construction and ventilation of house drainage, the foul smells or gases will pass through the house and out at the ventilating pipe, there will be the risk of the whole atmosphere of the Metropolis being poisoned, by the discharge of offensive odours from the ventilating pipes of 600,000 houses.

This important point then, the effect upon the atmosphere of the offensive odours from the largely increased number of ventilating pipes, must in a short time be dealt with; it is bad enough to be prostrated from the smells in one's own house, but it is doubly irritating to be poisoned in the streets from the smells of other persons' houses; and as sewer gases are heavier than atmospheric air, in certain conditions of the weather, and particularly in foggy weather, disagreeable smells will descend with serious effect upon the health of the inhabitants. This fact of descension of foul odours in certain weathers, will render the erection of shafts to ventilate the sewers undesirable; the whole question, then, of Sewer Ventilation, resolves itself into this: that by every care, trouble and expense which so serious a subject demands, the State must effectually secure that bad matter of all kinds is immediately

and rapidly removed from the sewers, and carried right away to the Sea.

WATER SERVICES.

The Water Supply of London has been previously dealt with herein, and I only refer to it again to say that, for the cleanliness and comfort of the poorer classes, it should be made compulsory on all Water Companies when laying on Water to a newly erected house for poor persons, that they should connect the *high pressure* Supply to the Main Cistern, which should be in all cases set up at the *top* of the house. (Between the Ceiling of the top floor and the rafters of the roof is a good place for a Cistern, as risk of freezing is lessened.) This compulsory fixing of the Main Cistern at the top of the house would enable, and this should be compulsory also, a Sink to be supplied with Water on every floor of the house. What a boon this would be to poor tired workers who come home after a day's toil, too weary, perhaps, to go all the way to the bottom of the house for a pail of water, and too weak, perhaps, to carry it up when obtained! It should be secured that every sink be supplied with a proper Waste Pipe leading to a trap, or pit, at the bottom of the house.

SLOP SINKS.

It should also be made compulsory that a Slop Sink be fixed on every floor of every new house erected for poor persons. This should be made of earthenware, with an earthenware syphon trap, and a spring hinged cover. What a boon this would also be to the tired and weak worker, and how conducive to cleanliness!

WATER CLOSET APPARATUS.

It should also be made compulsory that in new houses for the poorer classes, where there are at least two Tenants on a floor, one Water Closet be fixed on every floor. The Apparatus should be of the simplest and strongest kind, and the pan and trap should be of earthenware in one piece. The floors of the Water Closets should be finished with cement or some other hard and water-tight material, carried under the seat, and up against the walls as a skirting. The riser of the seat should be kept away from the floor about 6 inches, so as to enable the whole surface of the floor, including that under the seat, to be kept quite clean, and free from offensive accumulations.

The Walls of all Water Closets should be finished in Portland Cement, so that they may be Distempered, and periodically redistembered—an operation of the cheapest but most satisfactory character.

Every Water Closet should have a window (capable of being opened and shut) in direct communication with the external Air. No Water Closet should be fixed outside a house, access to which can only be obtained by exposure to the Weather. The inconvenience and danger when, perhaps, a person who is ill, young or old, has, in order to reach the Water Closet, to pass out into the open air on a cold, wet night, from a warm house, is so great, that this improvement should be made compulsory.

It will be noticed that I have not insisted upon a separate Water Service for the Sinks, as distinct from that for the Water Closets, the reason being that, if the Cistern is periodically emptied and cleaned out, and all pipes are clear and free, there is not, in my opinion, any necessity for the separate services which are now, in some quarters, so strenuously demanded.

WASH-HOUSES.

It should be made compulsory that every new house erected for the poorer classes, be provided with a Wash-house, fitted up with Copper and Furnace work, with a supply tap fixed over the Copper, and a trapped gulley in the paving, for the discharge of waste Water.

DRYING YARDS.

It should be made compulsory that every new house erected for the poorer classes be provided—either on the, what should be, Lead Flat of the main roof (protected all round by a high iron railing), or else in the back yard—with Drying Yards which should be of ample area for the purpose.

DUST SHOOTS, AND REMOVAL OF DUST.

It should be made compulsory that every new house erected for the poorer classes be provided with, one on each floor, a Dust Shoot of sufficient dimensions, and with a hinged flap at the opening. This shoot should discharge into a proper Dust Bin, easy of access for emptying, and kept at a safe distance from any window. It should be an order, not to be disobeyed, that these Dust Bins be emptied twice in every week, on particular days stated, say Wednesdays and Saturdays, and that all Dust Carts be *covered* Carts. It is very important to *fix* days, not to leave the matter ambiguous by specifying "at least twice in each week," but fix it so that, if the Dust and refuse is not cleared away on either of the days mentioned, on the following day, an undoubted and irrefutable ground of complaint has arisen.

FIRE ESCAPES.

It should be made compulsory that every new house erected for the poorer classes be provided with an Iron Ladder, always fixed in its place, and leading from the top floor to a door on to the main roof, which door should be fixed so as to open outwards by the easiest possible contrivances. Then, when the lower part of the house is in flames, and escape thence cut off, means of escape are at hand at the top of the house.

FIRE HYDRANTS.

Fire Hydrants should be compulsorily placed in all positions where they can be used with the greatest facility in checking the spread of Fire, and particularly in all Courts, Yards, and other places difficult of access for the ordinary means of putting out Fires.

PLAYING YARDS.

It should be made compulsory that, attached to every new house erected for the poorer classes, there be provided an area of Ground open on three, or at least two sides, but covered in at top, and paved with wood paving blocks, as a place of recreation for the poor children of the house, so that, even during wet weather, they may, if they like, escape from the crowded room, and play together in fresh air, under cover, and the more immediate control of the Parents. The superficial contents of this covered area should be at least 200 feet.

This provision would be useful as an adjunct to any Public Open Space near, and to the Open Space at the rear of every house, now provided for in the Metropolis Management and Building Acts Amendment Act, 1882.

GENERALLY.

I think that a few Compulsory Provisions, such as I have mentioned, would be essentially valuable for the health and comfort of the inhabitants of London, but the question of their due enforcement, if transformed into Acts of Parliament, will be dealt with under the general heading hereinafter of "Inadequacy of Machinery for Executing Acts."

The points just considered more particularly affect the "*Dwelling*" of the poorer classes, and we will now turn to the *Street.*

PAVINGS.

The Material Employed by the Vestries, for Paving the Footways and Carriageways, depends somewhat upon new ideas and inventions, and may, therefore, be left to the good judgment of those Bodies; but it would be well if, in Frosty Weather, the Vestries would exercise a little more intelligence, spread sand and gravel over the principal roadways, and thus prevent many a sad accident to man and horse.

SUBWAYS.

It should be made compulsory that in every new street formation, Subways be built under the roadway, for the reception of Sewers, Gas, Water, and other Pipes, and Telegraph and Telephone Wires, and that Vaults be erected under the footways.

GULLIES.

Street Gullies should be more particularly looked after. They should always be provided with an ample and well-

built brick trapped chamber, and the grating over them should be hinged, so as to allow of the clearance of the chamber without disturbing the channel of the roadway. Some of the gulley chambers are so constructed that it is very difficult to thoroughly cleanse them; and I observe, with pleasure, that the Vestry of St. Pancras, in their new Gullies, so construct the chamber that it can very readily be emptied and cleansed from the footway near, into which, and over the chambers, proper iron covers have been fitted. In every case, however, it should be made compulsory that the Gullies and Chambers be properly cleaned and flushed out with water at least once in each month in the year. Gullies should be fixed nearer to each other than they now are; in many cases the distance apart is so great, and the fall is so insufficient, that water, which should run away quickly into the Gullies, remains in the channels.

CLEANSING.

The Cleansing of all Carriageways should be done every Wednesday and Saturday, and care should be taken that all *channels* be more particularly scraped and cleansed. The droppings of horses might, as is now the case in some of the principal thoroughfares in the City, be continuously removed from the roadways; and the area of such work might very well be extended to a great many more thoroughfares than now.

It would be well, considering how the powers conferred upon the Parish officials and Police are neglected, that the cleansing of the Footways be included in the Contract for cleansing the Roadways; ratepayers would thus incur heavier rates, because of the neglect with which many of them now treat their frontages.

The cleansing and clearing of the Streets from Snow, it

should be clearly stated in the Contracts, and insisted upon, is to be entirely done each and every day, immediately following a fall of Snow, great or small; there should be no option left to any one, and no possibility of waiting for a Thaw, or some other excuse to save the cost of removing the Snow, a cost, be it borne in mind, which is generally allowed for in the Contract for Cleansing.

WATERING.

The system of Watering the carriageways, as adopted in London, is sometimes provocative of mirth. On a dry, dusty day, the temper of Londoners is sorely put to the test, by the clouds of dust which are allowed to drift along the highways and the byways, penetrating often to one's very skin, and to houses, the windows of which happen to be open; while on a wet day, when the dust on the roads has been conveniently and temperately laid by Nature's own Water Carts, out crawl the antique constructions, even now at times to be met with in London, drawn by horses apparently in the last stage of decay, whose harness is prevented from prematurely falling off, by sundry contrivances in which string forms an important part, and the whole concern conducted by poor old men, whose anatomy and clothing appear to have been purposely put together to harmonize with those of the quadrupeds. The small holes in the discharge pipe of the so-called Water Carts, having long ago been stopped up, a continuous stream finds its way in a body out of the *ends*, as also out of the open joints in the framework of the constructions before referred to, whereby pools of Water are formed along the roads; therefore, what was a few minutes before a conveniently moist carriage and footway is converted into a muddy swamp, to be splashed over one's clothes, and to wade

through in crossing the thoroughfares. It is true that many of the Parishes use Hydrostatic Vans, but the discharge pipes in these often allow Water to pass out in pools, which should only be emitted in gentle sprays.

In my opinion, a far preferable mode of watering most, if not all, of the London Carriage-ways would be by the Flexible Hose and Water Jet, which, in Paris, one sees so rapidly moved about the roadways, on the Carriages, or *Navigators* as they are called. By this system of watering, the Jet can be adjusted easily to the requirements of the particular roadway watered—it can be so used that a gentle spray is sent over the surface, and thus the legitimate end —the only end of perfect street watering—viz.: to lay dust and not create puddles—attained. A boon also, in very hot and dusty weather, could be secured, by extending the spray over some of the footways—particularly those around our Parks.

It is, however, very difficult to convince some persons that it is possible to improve upon the old-fashioned system of watering roads. There is a district in London where, a couple of years ago, the very principle which I have above recommended was put in force. Hydrants were fixed, at convenient distances apart, and the Flexible Hose and Navigators brought into play—the roads were watered so that the dust was completely laid, and puddles were absent, but obtuseness in some of the authorities prevailed—and after one season's trial the whole thing was allowed to fall into disuse.

There is another advantage gained by the use of the Flexible Hose, and that is, that the water can be directed with force into the *channels*—as it is in these that accumulation of refuse takes place, which can thus be readily removed, and the channel kept clear.

PUBLIC CONVENIENCES.

Provision is made in section LXXXVIII of the Metropolis Local Management Act, 1855, Empowering the Vestries and District Boards to provide and maintain Urinals, Waterclosets, and like conveniences.

URINALS.

Urinals for men are, it is true, provided, but they are not nearly sufficiently numerous, they are in many instances the reverse of good and suitable construction, and are very often dirty and ill-drained. More use should be made of the various *glazed* building materials now adopted with such excellent effect, and paint should be more frequently applied to prevent that decay which invariably arises in such situations.

WATER CLOSETS.

But where are the "Water-closets and like conveniencies" provided by the Vestries and District Boards? The only Public place of convenience, within my knowledge, where *Water-closets* are provided by the Vestry, is that next St. Paul's Church, Covent Garden—but I do not know whether, even here, a charge is not made for their use—however, there is the convenience, and exceedingly well arranged and constructed it is, worthy of imitation in all Parishes in London.

LAVATORIES.

This being so, why should not the benefits and convenience be extended to the provision of *Lavatories*, to be fitted up in similar Public places? The construction might

be strong and simple, the service and wastes so arranged that little damage could arise, Soap is cheap—and all that would be wanted would be an attendant to keep order. How sad it is to see, as I have seen many a time, at the Drinking Fountains in Endell Street and Grays Inn Road, poor boys, girls, women and men, making themselves as clean as they can, without the aid of soap, at these fountains, which are only constructed for drinking purposes, and go away refreshed, to dry their hands and faces on the piece of rag which may be nearest at hand! Surely we all like to see our outcasts as clean as they will make themselves; a cart in a Mews, or a dark doorway, has been their place of nocturnal repose, and we might, at least, provide them the wherewithal for their early morning ablution.

Conveniences for Women.

Then, when all this has been done, why should not W.C.'s and Lavatories, similar to those provided for *Men*, be fitted up for the poor *Girls* and *Women* of London? Why should not the poor Female, and indeed the middle class Female, whose avocation or pleasure causes their absence from home for many hours, have provided for them clean and respectable Public Conveniences?

What I am here advocating is of course the *Gratuitous*, in every way, provision of Conveniences for poor Men and Women, erected and maintained at the Public expense; but it would, I am sure, be not an unprofitable undertaking if Conveniences of a superior character for Men and Women, were provided in proper situations in London. All visitors to Paris know the advantage of the system there, no shock to modesty is experienced, and the benefits are undeniable.

LAUNDRIES.

Public Laundries should be provided to satisfy the wants of each locality, the prices for using them being so low as to be within the reach of all. Thus a poor person who has not the accommodation at home (not living in one of those dwellings for the poorer classes, in which, I have previously said, Washhouses should be provided) may easily, and in a cleanly manner, wash linen, and another item would be added to the list of healthy and clean provisions in London.

TELEPHONE AND TELEGRAPH WIRES.

The whole of the *Overhead* Telephone and Telegraph Wires now disfiguring the Metropolis, as well as endangering the lives and property of its inhabitants, should be at once taken down and laid in Subways specially provided for them. I am quite aware how difficult and expensive an operation this would be, but the increase of wires, during the last few years, is enormous, and unless overhead wires are prohibited at once, and the present ones taken down, London will be made quite hideous and dangerous by the wires crossing and recrossing each other over the houses, disfiguring the sky-line of many of them, and injuring the roofs and chimney stacks of most of them, which are, in many cases, in risk of collapse by reason of the iron stays, upon which there is considerable pressure, being tied down to them.

HOARDS.

At the present moment Hoards are erected around building works to protect the Public from injury during the operations. They are set up subject to the conditions of

Licenses issued by the Parish Authorities, but, according to the decision of the late Lord Chief Justice Cockburn, builders may do pretty well what they like with the Hoards. If a Vestry should happen to attempt to restrict the use of the hoard to the one purpose for which it is set up, viz. the protection of the Public, the builder may laugh the Vestry to scorn, and should the Vestry decline to grant or renew the license, he may proceed to set up his hoard, and to keep it where set up, until it suits his convenience to remove it. It is true that the terms of the License would appear to be sufficiently stringent to regulate Mr. Builder, but as a matter of fact, bearing in mind the decision of Lord Chief Justice Cockburn, they are not sufficiently so, and another Act of Parliament would be required to make them so. An instance of this has only this year come within my experience, where, on land in Coventry Street, let, bear in mind, by the Metropolitan Board itself, a builder has been allowed to bring out his hoard, and to keep it there for months, to a most unnecessary projection into the Public way, and to carry it up to a most unnecessary height—thereby interfering with the traffic, and injuriously affecting the business of a tradesman whose premises adjoined the hoarding—and why? because he was obtaining all that time the advantages arising from the conversion of a hoard, which should only have been 8 feet high, and for the protection of the Public, into a huge advertizing station. I used every endeavour with Architect, Builder, and Vestry Surveyor, but the two former would not, and the latter could not, compel the lowering and setting back of the hoarding, so the Public and the Tradesman had to suffer, until the very exigencies of the completion of the building itself, rendered the removal of the hoard desirable.

I quite think, therefore, that a new Act of Parliament should be passed, conferring absolute power on the Vestries

or other Local Authorities as regards the erection of hoards, and enclosures of a like nature.

MORTUARIES.

The Mortuaries and Dead houses, as they now exist, are chiefly for the reception of Suicides, persons accidentally killed, for other special cases, and Post Mortem Examinations. These "Dead houses," as they were called, were, and are, in some cases, little more than dark, dirty, horrible holes, a few, however, of the Parishes have built new Mortuaries, as far as possible perfect, and with every regard paid to decency and sanitary completeness.

I think that the erection of new, spacious, well designed buildings, are now needed, in which, without distress to the loving hearts of relatives, dead bodies might be taken from the crowded home, and deposited in these Mortuaries until the day of burial, when the body might be either taken direct to the Cemetery, or to the home, as the relatives might most desire.

I would have these mortuaries designed to provide separate and distinct compartments for each body, and of sufficient size to admit the presence of three or four relatives; each compartment well lighted and ventilated, and provided with a door with lock and keys, one key in charge of the Mortuary Superintendent, the other in the charge of the nearest relative. The partitions of the compartments need only be 8 feet high, and the general height of the Mortuary being 15 feet, a space of 7 feet would be left all over, by which means thorough ventilation of each compartment would be secured.

The material of these Mortuaries, inside, should be chiefly of the glazed hardware description, wood-work being as little used as possible; and the design of the exterior

should be consistently cheerful, not of that repellant nature which would lead sensitive and broken-hearted relatives to prefer the stifled home to the better-ventilated Mortuary, with the words "workhouse" and "charity" ingrained on the surface of its very Architecture.

GYMNASIA, PUBLIC SWIMMING BATHS, PUBLIC LIBRARIES, TECHNICAL SCHOOLS, ETC.

Although proper appendages to a well governed City, do not come so immediately under the heading of "Sanitary Considerations," and I shall therefore deal with them more fully under the heading of "Reconstructed Central London," merely remarking here, how much good is already being done by the Metropolitan Public Garden, Boulevard, and Playground Association, in providing Gymnasia for the Poor Children of London.

OPEN SPACES.

The Metropolis Management and Building Acts (Amendment) Act, 1882, provides for open spaces to be left at the rear of all new buildings intended to be used wholly or in part as Dwelling houses, *when such are to be erected upon a site not previously occupied in whole, or in part, by a building.* This latter part of the provision is an example of how easy it is to render nugatory the clause of any Act passed with the best intentions; most assuredly there should have been no such qualification as is here inserted; the open space specified should have applied to the newly erected dwelling house, whether the site was, or was not, previously occupied in whole, or in part, by a building. The exception made in the Act is quite sufficient to upset its beneficial working, because, in London, there is hardly a spot which has not been previously occupied in whole, or in part, by a building.

Open spaces in front of buildings might very often be secured with advantage to the *Dwellers* by the additional light and air gained, and to the *Public* by the increased width of the thoroughfares, the powers possessed by the Metropolitan Board, as regards "Lines of Building Frontage," should have secured, wherever practicable, the setting back of buildings, in narrow thoroughfares, when large rebuilding works are proceeding—but the condition into which *Chancery Lane* has been allowed to fall, is very clear evidence that proper supervision is not secured in such matters, and that golden opportunities are allowed to slide away, never to be so easily regained. I shall deal more particularly with Chancery Lane, however, under the heading of "Architectural Considerations."

We have now to regard the more important question of Open Spaces under the head of Parks, Squares, and Recreation Grounds, and it may be of service to note how London stands in that respect as compared with other great Cities.

Paris has 172,000 acres in Parks, or One Acre to every 13 inhabitants.

Vienna has One Acre to every 100 persons.

Chicago one to every 200 persons.

Philadelphia one to every 300.

Brooklyn one to every 639.

New York one to every 1,363, but it is stated that New York proposes to buy 3,808 acres for additional Parks, at an estimated cost of 2,000 dollars per acre, or, in the aggregate, an expenditure of 7,616,000 dollars.

The London Builders of half a century back appear to have clearly recognized the importance of providing open spaces in the midst of their building speculations, taking the form, as they do, of that characteristic feature of London—the *Square;* and it would seem to have been reserved

for the more advanced intelligence of the latter part of the nineteenth century, to have used every means, which the sacredness of private property and the laches of constituted authority permit, to cover every foot of available land for building, reserving only for open space, just sufficient to permit the due or partial lighting of the buildings erected. To expect that a private landlord, or a Metropolitan Board of Works, would sacrifice so much per foot superficial of ground rent in order to provide ample and healthy breathing or recreation space for the dwellers in this vast City, is to betray a lamentable ignorance of their commercial instincts, and I unhesitatingly assert, that the foolish greed of the ground landlords, and the worse than foolish action of the Metropolitan Board, will tend more to bring about startling upheavals of rights in property, than 10 years of advanced Radical political reign.

It may be interesting to note here, the respective areas of the principal open spaces, in and around the Metropolis, which will lead us to the equally interesting Comparison with other Cities, to which I have before referred.

Of *Parks and other open Spaces* in what is termed *Greater London* the following are, approximately the Areas :—

	Acres.
Finsbury Park	115
Stoke Newington Common	5½
Victoria Park	300
Regent's Park and Primrose Hill	450
St. James's Park	83
The Green Park	71
Hyde Park	400
Kensington Gardens	300
Paddington Green	1½
Battersea Park	250
Southwark Park	63

	Acres.
Kennington Park	·25
Thames Embankment Gardens	13
London Fields	27
South Hackney Common	5½
Hackney Downs	50
Clapton Common	5½
North Mill Field	29
South Mill Field	28
Clapham Common	220
Wandsworth Common	160
Brook Green	6
Eelbrook Common	18
Parson's Green	4
Goose Green	6
Camberwell Green	1½
West Ham Park	80
Peckham Rye	64
Shepherds Bush Common	8
Botall Heath	55
Plumstead Common	110
Shoulder of Mutton Green	4
Tooting Common	207
Barnes Common	100
Kew Gardens	300
Richmond Park	2,250
Bushey Park	1,000
Wimbledon Common and Putney Heath	1,000
Wormwood Scrubs	200
Blackheath	300
Nunhead Green	1½
Epping Forest	5,348
Wanstead Park	182
Greenwich Park	200

This gives a total of 14,047 Acres, and if we add to it 250 acres for Hampstead Heath, and other places not mentioned in the above list, and to that add 150 acres, which is, approximately, the total area of the London *Squares*, we arrive at the grand total of 14,447 Acres of Open Space and Recreation Ground in *Greater London.*

Greater London has (in 1884), an Estimated Population of 5,093,995,—and the Open Spaces being 14,447 Acres, gives one acre to every 353 inhabitants. This compares very unfavourably with Paris, which has one acre to every 13 inhabitants, and with Vienna, which has one to every 100 inhabitants; but it is still more unfavourable and serious when we consider that the Inner Ring of London with its Estimated Population (in 1884), of 4,019,000, has only about 4,000 acres of Open Space including the Squares: thus, where the population is thickest, where the Streets are narrow and confined, where Courts and Alleys abound, there is only one acre of real Open Space to every 1,000 inhabitants: a state of things which is only worse in New York, where the authorities are now endeavouring to buy nearly 4,000 acres of land for Additional Parks.

INADEQUACY OF MACHINERY FOR EXECUTING ACTS.

I have now indicated the general Powers which are capable of enforcement in providing for the healthy maintenance of this our great city—I have made additional suggestions, the carrying out of which, would, in my opinion, still further improve the dwellers in it, more particularly the *Poor* dweller in it—and I shall now proceed to state why the Results have hitherto fallen short of the *Powers*:—

1. I venture to assert that many of the Acts of Parliament relating to the Sanitary Government of London, are utterly unknown to those appointed under them to carry them into effect.

2. Only those who have had the administration of Acts of Parliament know how heavily they sometimes weigh on the person least able to bear them, and how, by legal quibble, and grasp of loop-hole, the person intended to suffer by reason of his culpable neglect, escapes scot free—and how strong the inclination is to continue a mild enforcement of almost obsolete law, when strict compliance would lead to the temporary collapse of perhaps a poor and innocent lessee, upon whom a rich lessor has artfully contrived to shift his responsibility.

3. It cannot be doubted that due enforcement of existing Acts, with the provision of ample officers, for the purpose of house-to-house visitation, would lead at first to an increase in the rates and in house rent, but this should certainly not deter due administration, because, in a few years, the older portions of the Metro-

polis would become gradually renovated, and the newer portions should, at the start, be so constructed that future trouble would be almost entirely removed.

4. To prove how impossible it is that adequate supervision can be maintained with existing machinery, it is only necessary to quote the following two cases.

In the Parish of St. Marylebone, there are about 16,000 houses, and 155,000 inhabitants. The enforcement, therefore, of the various Acts of Parliament relating to the whole Sanitary Maintenance of that Parish, is supposed to be provided for by the appointment of one Medical Officer and Analyst, and three Sanitary Inspectors, assisted, at times, by the Parish Beadles.

In the Parish of St. Pancras, there are about 24,700 houses, and 236,000 inhabitants, whose interests under Sanitary Acts of Parliament are supposed to be secured by two Medical Officers and Analysts, and three Sanitary Inspectors.

Note this important fact "three Sanitary Inspectors to survey 24,700 houses!"

5. What education or special training have the Sanitary Inspectors of London received to qualify them for the duties they are called upon to fulfil? I remember that a short time back, a vacancy occurred in St. Pancras Parish for a Sanitary Inspector, and the applicants for the post, instead of being educated for such special work, were all sorts and conditions of men, who appeared to conclude that the duties of a Sanitary Inspector consisted principally in the survey of dust holes within, and the removal of dead cats without, the dwelling house.

6. Who are the men in whose patronage is the appointment of the Officers, and what guarantee is there that, amongst the scratch and mutable body known as

"Vestrymen," there is sufficient intellect and fairness to ensure that the most competent candidate is appointed to fill a vacancy?

7. It is, in my opinion, perfectly clear that the one great authority appointed by the State, which quite inadequately meets the position, is The Metropolitan Board of Works.

The Board usually governs, or has the power to govern, the whole of the Metropolis, and if the Vestries and District Boards fail in their duties, the Board's action could easily amend matters.

It is no part of my province now to enquire whether or not the staff of the Board is sufficient. I believe that all the Officers of the Board are animated by a desire to do what is right; but, somehow or other, it frequently forces itself upon me, that the first Body in London to frustrate the good intentions of Parliament, is the Board itself. As it is only right that I should be able to justify such a statement, I will go into sufficient detail to provide material for that contradiction, which if I am wrong, will not perhaps be long delayed.

Northumberland Avenue, by reason of its very limited length, and the fact that its formation principally involved the destruction only of one Nobleman's property, was, as regards line and level, one of the easiest of Engineering feats. It was very forcibly urged at the time, that although it might not be possible to avoid opening up the unsightly South Eastern Railway Station, it was to be desired that, when viewed from the East, the Nelson Monument should stand exactly central with the Avenue. By an obtuseness which is almost unaccountable, the Metropolitan Board has so laid out the line of the thoroughfare, that the opportunity for a little architectural effect has been lost, and the Nelson Monument stands just outside the central line of the

Avenue. Apparently from a similar obtuseness, the levels of the roadway are awkward, and its junction with Charing Cross and the crossings formed thereby, are as dangerous for pedestrians as any in London.

The width of Northumberland Avenue will be referred to hereafter, under the heading of "Architectural Considerations."

The Metropolitan Street Improvements Act enabled the Board to make certain New Streets and Street improvements within the Metropolis; very large powers being conferred upon the Board as to the acquisition of lands, which, in its wisdom, it might desire for those improvements. There is a street, *improved* by the Board, running from Oxford Street to Shoreditch, but scarcely any one is aware of this because it commences at Hart Street, Bloomsbury, which has not been altered or widened for that purpose, and when Southampton Row is reached, the thoroughfare is blocked from visual line by a large Fire Engine Station of the Board's own construction. Some widening and other Works carry the thoroughfare to Clerkenwell Road, where, for ten years, the vacant plots of the Board have been lying idle, being used only as refuse holes by those who choose to so make them. All sorts of unsightliness in the way of backs of old houses, old party-walls, partially demolished tenements, &c. have been opened up and left by the Board, to embellish the new roadway, till it reaches the Goswell Road, where it again loses itself because it does not line, as it should, directly with Old Street. Thus what might have been a splendid thoroughfare, carrying out the only object of its construction, viz.: the relief of Holborn of some of its traffic, is very little used, because the Board have made a "Street Improvement" which has not a clear commencement, a straight line, or a satisfactory ending.

The most recent Improvement made by the Board is from

Holborn to Clerkenwell Road. The Board has formed a fine straight thoroughfare, but neutralized the good effects of the scheme by leaving up, to face the backs of the new buildings, old, wretched tenements and Courts, with all their objectional features, to stand for many years, perhaps, disfiguring the neighbourhood, and kept from falling only by the *shores* which the Board has been compelled to fix to sustain them: add to this, that the Board have not constructed vaults under the footway, or a subway under the roadway, and the incompleteness of the last of the schemes of the Board may be said to be complete. What could have induced the Board to construct this thoroughfare without, at the same time, constructing the vaults and subway, which it considered so very important an improvement (and it is a *most* important improvement), under the thoroughfares of the Victoria Embankment, Queen Victoria Street, Garrick Street, Southwark Street, Commercial Street and Northumberland Avenue, only a Metropolitan Board could satisfactorily explain; at any rate the result will be, that, when the vaults are required for the new buildings which are to face the Gray's Inn Road, the footway, which the Board has just laid down, must be taken up for their construction, and that when anything is required to be done to the sewers, water or gas pipes, &c., the new roadway must be broken up—the traffic stopped, and the homogeneity of the metalling for ever lost.

In October, 1884, only a few months after the opening of Gray's Inn Road, the footway has been taken up, in a large number of places, at equal distances, to enable the planting of trees. The area of paving taken up is considerable, it has been broken to pieces in the operation, the joints of that which is left occur, of course, just as they may, small strips and large strips are left around the square spaces, and, generally, the whole footway is damaged; money com-

pletely wasted, and a lamentable want of foresight exhibited. It is perfectly clear that all these square spaces should have been accurately set out at the time, and enclosed by a neat tooled York margin, money would have been saved, and a neat and satisfactory appearance given to the whole footway.

The Board fails, not only in the allignments of its new streets, but in judgment in selection of the property to be scheduled. It is not a secret that partial, or only barely sufficient, demolition for the purposes of a new thoroughfare, entails a certain loss—the locality opened up increases in value, but the Improver gains nothing, whereas, if ample surrroundings were cleared the additional value of the land would accrue, as it should to the Improver. There is scarcely a thoroughfare which the Board has formed in which painful evidence of this error in judgment is not apparent, and, so far as I can judge, there is not any excuse for it, because Parliament has conferred sufficient powers upon the Board to enable it to schedule all the property which it may consider essential for the success of the particular scheme in hand.

The Board fails in another particular. When it has cleared property for the purposes of a new street, the frontages are let by tender, in plots, set out by the Board itself. The Board, therefore, has the power to so plan the sites, that cross thoroughfares of proper width, and plots of sufficient area for the erection of healthful buildings could be left. This being so, plots in Gray's Inn Road have been set out, leaving distances of 4′ : 0″, 5′ : 0″, 6′ : 0″ and 8′ : 0″ respectively between the sites for the new Artizans' Dwellings and the old houses which have been left standing. Another plot is only 15′ : 0″ in depth, and another is of the gigantic size of 34′ : 0 × 4′ : 6″.

So again, in Golden Lane, where the Board and the

Vestry of St. Luke's between them, seem to have muddled affairs, and left a plot which is about 100 feet in length by about 10 feet 6 inches in width—this choice slice of land standing in such a position that it clearly should have been thrown into the widening of Roscoe Street. Only a Metropolitan Board could tell what sort of structure could be placed upon a site 34′ : 0″ × 4′ : 6″ (about 32′ : 6″ × 3′ : 0″ when only 9″ walls have been built), and costermongers have determined the only use to which the plot in Golden Lane can be put, and that is an asylum for their barrows.

I must preface the next failure of the Board by insisting that its improvements are Public improvements paid for by the Public. Its operations, therefore, must not be confounded with those of a private Landlord, who is quite entitled to hold out for as much as he can get for his land. It is quite lamentable to walk through any of the thoroughfares made by the Board—there are the plots lying as refuse holes, and there they are likely to remain, and all because the Board chooses to place upon them a value which has been proved over and over again to be fictitious. It is well known that about 3/- per foot superficial, would have recouped the Board for the whole of its outlay on the acquisition and formation of Northumberland Avenue, and yet for years the land was lying idle because the Board held out for rents which it was difficult to obtain, and which it has not obtained—rents so high that no inducement whatever to building speculators was offered. And so, during all these years, and the still greater number of years land has been lying idle in Clerkenwell Road, the Parishes have lost the rates from the buildings which would, had the Board been reasonable in its requirements, long ago have been erected, the ratepayers correspondingly suffering. The Board should be compelled

to put all surplus lands up to Public Auction, the reserve price should be that which would recoup it for all expenses connected with the Improvement, whatever price above this which might be realized, going into the coffers of the Board. Thus Improvements would be sooner completed, buildings, instead of refuse holes would front the new thoroughfares, ratepayers would be relieved of some of their burdens, the Public would get all it is entitled to, and the Board would succeed in carrying out one of the objects for which it was created.

Another complaint I urge against the Board is on account of its dilatoriness in carrying out Improvements after they have been sanctioned by Parliament. A conspicuous instance of this is the triangular piece of land next Tichborne Street and Piccadilly Circus. Many years ago the Board compulsorily acquired the Freehold interest in this piece of ground—and there it still stands with the houses upon it which have been re-let, or are now held, by the Board. The Public lose the benefit of what will, I trust, be an open space (for if the Board attempts to build on what should clearly be left open, and treated, perhaps as an ornamental enclosure with seats for the weary, I hope that prompt action will be taken by the Public to prevent it), and a wrong is committed on the owners, who should have been allowed to have retained their land until within a short time of its being absolutely required for the improvement.

The Metropolis Management and Building Acts Amendment Act, 1878, enacts that 20 feet is to be the width of every new roadway used for Foot traffic only, and 40 feet for a roadway used for Carriage traffic—and the Bye-Law, made by the Board, further developes this by the following words :—

"Forty feet, at the least, shall be the width of every new street intended for carriage traffic. Twenty feet, at the

least, shall be the width of every new street intended only for foot traffic. Provided that the said width respectively, shall be construed to mean the width of the carriage and footway only, exclusive of any gardens, forecourts, open areas, or other spaces in front of the houses or buildings erected, or intended to be erected in any street . . . . but where forecourts or other spaces are intended to be left in front of the houses or buildings, then the width of the street as already defined, shall be measured from the centre line up to the fence, railing, or boundary dividing, or intended to divide, such forecourts, gardens, or spaces for the public way."

Now this is all very good, and perfectly clear in description and intention, and the distinguished Engineer of the Board in his admirable address delivered at the Institution of Civil Engineers, on January 8, 1884, says, that to secure the free admission of light and air, no street should be of less width than 40 feet, and not less than two-thirds of the height of the houses surrounding it.

The widening of Coventry Street has just been carried out by the Metropolitan Board, and the surplus sites let for building—but regardless of the Act of 1878, of its own Bye-Laws, and of the opinion of its Chief Engineer, the Architectural Department of the Board have allowed the erection of buildings on each side of a thoroughfare for foot traffic, just west of the Prince's Theatre, leaving a width of 16′ : 3″ only, instead of the 20 feet provided by the Act; and they have allowed even this 16′ : 3″ to be further impinged by the construction of a circular projection at the angle of the building at the north-east corner, further reducing the width by about 2 feet.

Oxendon Street, Coventry Street, a thoroughfare for carriage traffic, has been allowed by the Board to have a width of 39′ : 3″ instead of the 40 feet, at the least, and this, too,

in a street with a Theatre at the corner, where, above all others, good width is needed.

Again, at the widening and improvement works in Soho —the Board have permitted the erection of those huge and, in case of Fire to be dreaded, blocks of Artizans' Dwellings, with a width of only 18 feet between the face of the old houses in Newport Court, and the face of the new dwellings; but deducting the width of the area, which by the Board's own Bye-Law *is* to be deducted, there is only a clear width of 13 feet, instead of the 20 feet prescribed by the Act of 1878.

I should very much like to hear an explanation of the circumstances under which the serious differences in width above referred to, have been permitted by the Board. If the whole length of a thoroughfare is not new, the Board, particularly when the letting of the land is under its own control, should secure that at least the new entrances to it, shall be of the width prescribed by the Act and its own Bye-Laws, and thus, when the adjoining properties are rebuilt, the Board could secure that they are set back to the line of the new buildings, and so, gradually and necessarily, the whole street could be made at least of the prescribed width.

A wise Legislature took it into its head that Northumberland Avenue at least should escape the stigma of absence of Architectural Art, so in the 36 and 37 Vict: "Charing Cross and Victoria Embankment Approach Act, 1873," the following clause was inserted:—"The architectural elevations of all buildings to be erected under this Act, fronting the new Approach to the Thames Embankment, or fronting any street to be made under this Act, shall be submitted by the Board to the consideration of the Council the Royal Institute of British Architects previous to the commencement of any such buildings."

As this clause contains the, what I will term, *untechnical* words, "Architectural Elevations," it was, I presume, drawn by a Parliamentary Solicitor, whose humour is conspicuous. It will be observed that "consideration" only of the designs, not *approval* is provided for, and the interpretation placed upon this word by Sir J. M. Hogg, in the House of Commons, as reported in the "Times" of May 11, 1883, shows that he, at least, appreciated the witticism: for, according to the report referred to, he used the following words—"The design for the Hotel Metropole was submitted to the Institute of British Architects, as required by the Act of Parliament, but after due consideration *the Board did not think it necessary to put the tenant to the expense of carrying out the alterations suggested by the Institute having regard to the fact that the plans for the building had already been amended in accordance with the recommendations of the Board's Architect, who was himself then a Member of the Council of the Institute.*" So that, after cajoling the Public into the belief that the Institute was supervising the designs of the buildings to be erected, the Chairman of the Board coolly tells the House that the Board does not care a brass farthing for the Institute—for, has not the Board's own Architect recommended approval of the designs? Was not the word *consideration*, not *approval?* and what could be nicer than the buildings erected in the Avenue?

Thus it is that good intentions are deliberately frustrated by those whose first duty it should be to see that they are properly carried out.

8. Unfortunately, however, the Metropolitan Board is not the only sinner in this respect.

The Corporation of the City of London had to let, last year, a large piece of land facing the Thames Embankment, between the City of London School and the Garden of the Inner Temple, and, notwithstanding that the Architects of

that fine School set back their building so as to leave a sufficient distance between the footway of the Embankment and the frontage line, the Corporation actually invited tenders for the land, shown on the plans as to be built upon *right up to the edge of the footway of the Embankment*, and all because of the greed for a little more ground rent.[1]

9. See, too, what the present Government is doing at Charing Cross.

The site for the new Admiralty and War Office has one of the corners—the most striking one for Architectural effect—carved out of it, because the Government will not buy up Drummond's Bank and a house or two South of it. The designs of the competitors clearly show how detrimental this must be to the proper treatment of the façade towards Charing Cross, and when the new offices are built and it is too late to remedy the evil, there will be a Public outcry at this last of the Architectural blunders of the Metropolis. Imagine what a grand opportunity will have been lost—what a fine angle for Architectural display sacrificed, how boldly that corner would stand out as the grand feature in the new thoroughfare, which certainly ought to be driven by it, and through to the Mall, opening up a vista into the Park from Charing Cross, and giving an idea of what could be done in London, if only matters were courageously taken in hand, and improvements carried out, consistent with the intelligence and wealth of the Nation.

10. Another reason why better results are not attained from existing Powers, is the undoubted Apathy which characterizes three-fourths of the ratepaying population of London.

They allow men to be elected to fill offices involving control over the expenditure of many thousands of pounds

[1] Since these words were written the new buildings of Sion College have been brought out to the edge of the footway of the Embankment.

a year (towards which they have to contribute), whom they would not trust further than they could see them in any ordinary commercial transaction, they will not take even the trouble to record their vote for the election of their own Vestrymen—they would not, themselves, associate with the Vestrymen elected, and, leaving the Election to those in more ways than one, deeply interested in the result, they indirectly further gross administration, and lower the standard of what should be a body of respectable, responsible, and intelligent men, having in their hands the care of the ratepayers' money, and the health and comfort of the inhabitants.

This Apathy very naturally extends to the paid officials, the Metropolitan Board and the Public, regard as troublesome and meddling, any man who goes straight to his duty, and fights it out to the end—he is very soon told that he is considered rather too clever, and, his existence depending upon his situation, he gradually subsides into the stock pattern of a sleek and obsequious official.

CONCLUSIONS.

I HAVE now shown the extent of the Powers possessed by the Government of London to provide for the healthy existence of its inhabitants; some reasons why these Powers are inadequately met; and some additional provisions which should, in my opinion, be made to make them more complete. I will now proceed to suggest a few points which might ensure a more systematic observance of Acts of Parliament.

1. The whole of the present Acts, affecting London, should be Repealed, and a new Act framed, embodying the present and all additional clauses required to make it complete.

2. A copious Index should accompany the volume, for easy reference.

3. For the guidance of Officials, a careful record should be kept of all disputed cases.

4. A Plan of London should be made, showing small subdivisions by different colours—each Division, or District, should have its own responsible Surveyor and under officials—so that, in the event of any question arising, it may be seen at a glance which officer is required for any particular street or place mentioned.

5. A Department of Works should be created with an acting responsible Minister at its head, and, under him, two acting responsible Under-Secretaries, with adequate staff under them.

6. A staff of well qualified Surveyors should be employed, at such salaries as would command good men. These Surveyors should have power to enforce the

Minor Provisions of the Act—which provisions should be specially set out therein, as to be dealt with by the Surveyors—but the more important provisions should be enforced only after consultation with the Under-Secretaries or Minister.

7. A staff of efficient Sanitary Inspectors should be appointed, acting under the orders and guidance of the Surveyors. The duty of these Inspectors should be carefully set out in printed particulars, and they should be furnished with printed Forms to fill and hand to the Surveyors, in all cases where action is needed.

8. Yards should be provided at different parts of the Metropolis, containing all the necessary Materials, Appliances and Workmen, for carrying out the requisitions of the Department of Works, in the event of the neglect of the persons served with Notice so to comply with them.

9. Such Additional Provisions and Emendations should be made in the Act from time to time, as experience of its working proved to be necessary.

THE
ARCHITECTURAL CONSIDERATIONS.

As this is intended to be essentially a Practical Essay, I do not propose to enter upon matters of opinion as regards *Style*, except when questions of utility and propriety appear to be contingent upon the particular Style adopted by the Architect, and as the technical and more detailed portion of the subject takes its place under the Head of Sanitary Considerations, and "The Reconstruction." I propose to confine this portion of the Essay to the general questions involved in the practice of the Art of Architecture.

Of all the Arts, Architecture must ever be regarded as the most important in the history of any nation. Springing as it did from absolute necessity, from the simple wants of man to protect himself from the elements, it has developed into a pure artistic science, exercising the greatest faculties of the mind, culminating in the grandest monuments of taste and skill. It is also the most comprehensive of the Arts. A successful career in the field of Architecture, today, demands the possession of an elevated and refined taste; a correct knowledge of the Principles of the Art; a scientific acquaintance with constructive materials of all kinds; a watchful care to keep pace with the inventions and improvements constantly appearing, which may tend to alter the very character of the Architectural undertaking; a clear insight into principles of commercial procedure; a grasp of the exact value of the materials and labour employed in the works; correct perception of the legal bearings of the

engagements and responsibilities respectively of the Client, Architect and Builder; an active, patient and unflagging energy in the superintendence of the works while in progress; a clear judicial mind to perceive and secure just and fair treatment for Client, Architect and Builder; a forbearing knowledge of human weaknesses and eccentricities; and a readiness to at all times bow in meek, submissive spirit, when the Client informs the Architect that the exercise of the faculties above outlined, is certainly more than paid for by the little cheque for 5 per cent.

Architecture, again, is the first of the Arts on account of its substantial obtrusion and *longevity*, if I may so term it. The Patron who commissions a Sculptor to outline his features, may, if he thinks ill of the result, and that posterity will judge harshly of his beauty, commit the Bust to a position in the corner of a friendly cellar, retaining the pedestal as a stand for the domestic "moderator." When the Landscape, which enchanted him under the wily artifices of an Albo-Carbon arrives home, and, on a wall which receives the sun light in the wrong direction during the day, and the weak artificial light in the wrong direction during the night, seems to have suddenly lost its beauty, and to exhibit only dark, indistinct, and oily patches, he can at once consign it to the Day Nursery, where it will do its work in furthering that Art culture which must be so essential to the æsthetic acquirements of that interesting School of Critics. When he has been cajoled to lay out a sovereign in the purchase of tickets to listen to the vocal blandishments of Mademoiselle Bon-jour, or Signor Tamborini, and he does not feel quite satisfied with either, he may at once resume the pleasures of home. *But when he builds a House*, in which there is not one comfortable room, in which signs of premature decay seem to appear wherever he looks, a house in which the drains are, the

"Sanitary Engineer" says, *very bad;* difficulty of ridding himself of the disappointment becomes painfully apparent —the land will not move, and the only escape from the "desirable acquisition" appears to be to await that day, which does not appear far distant, when the whole structure will subside, *un*like the baseless fabric of a vision, leave only wreck behind, and enable him once more (after the necessary clearance) to pace his own freehold, hampered not by Architectural obstructions, and free to jump and skip even like unto the young Unicorn.

But if this is so, and the world is thus easily rid of an abortion, it is undoubtedly the case that examples of true construction are essentially lasting. How important, how paramount it is therefore, that *every* work should have the impress of taste, thought and skill, so that the minds of the following generation are not corrupted, the feelings of the present not outraged!

I shall presently endeavour to show that, notwithstanding many noble monuments of the science and art of building which have been erected in London during the last fifty years, there are vast works, built to endure for ages, which are certainly deficient in many of the grand principles of Architecture, which are regarded with pain by all true lovers of the Art, and which will no doubt excite the curiosity, if not the condemnation, of a very early posterity.

Architecture, we know, is subject to Innovation, Caprice and Ignorance, but it is to my mind perfectly clear that he who wishes to produce a grand work, must disregard caprice, and to a certain extent innovation. There are principles of Proportion, Symmetry, Variety, and Unity, which *must* be adhered to in *whatever style* is adopted, and, added to these, is the absolute necessity of securing Convenience, Elegance and Simplicity. Every arrangement

of plan must have its legitimate use and *reason*, every piece of ornament its true character of subsidiary enhancement of effect, not a false and futile endeavour to hide paucity of design, and ignorance of true principles; those principles which, it has been observed, are all positive, constant, and general, absolute properties of the Art, regulated by good sense, and which, taken together, constitute the real and essential beauty of Architecture. But if once these are lost sight of, Architecture disappears, it is no longer a Science or an Art, but becomes mannered, capricious and absurd.

Considering the Inventions and Discoveries which will probably distinguish this latter part of the Nineteenth Century, it appears somewhat curious that no Distinct or Original style of Architecture has been introduced in it. Babylonia, Nineveh, Egypt, must have, either by discovery or correction, invented their styles; Greece, we know, perfected hers, and left us as an unexampled proof, the Parthenon at Athens. Rome borrowed from Etruria, and if she did not *invent* the Arch, she adopted it with such force as to revolutionize the whole preceding theory of Architecture. Byzantine and Romanesque, Syrian, Persian, Indian, Chinese, Arabian, German, French, Anglo-Saxon, Norman, Transitional, Early English, Decorated, Perpendicular, Debased, Tudor, Elizabethan, Queen Anne, Revival of Italian, Revival of Gothic, Revival of Queen Anne, Victorian, all have had a turn, many live and will live, some exist, but it is to be hoped that one at least, the rejuvenated Queen Anne, sick as it is, and near unto death, will expire even before its loving Parents have witnessed its unhealthy maturity.

I think that, dividing Architecture into two broad Schools, and calling them respectively Classic and Gothic, it matters very little which is selected by the really accomplished Architect; his skill will enable him to clothe his skeleton

with respectable flesh, but the mistake so often made is, that the Architect constructs a skeleton of deformed anatomy, a monstrosity, and seeks to make it presentable by overloading it with meretricious covering, depending upon a vitiated Public taste to mistake vulgar trappings for respectable Art.

Mr. Beresford Hope, in his address before the Social Science Congress, held at Birmingham in September, 1884, after pointing out that, by reason of the ignorance of the Arch, the practice of Grecian Architecture "spells weakness," proceeds to state that the architecture which is really strong, creates the plan first, and then clothes it with all needful forms of beauty—and "such," he says, *speaking generally, is the Gothic Method*—after which extraordinary statement, he did not deny the soft impeachment levelled at him by Mr. Shaw Lefevre, that he (Mr. Hope) was a great admirer of the New Courts of Justice in London. If there is one fault in this building more conspicuous than another, it is that very fault, that the plan must have been created last, for it would be simply futile to attempt to deny that the plan of this building—considering the uses to which it is put—is one of the greatest Architectural blunders of this age. Why should the mere fact that the Gothic arch is pointed, and the Grecian lintol straight, produce a corridor which is painfully dark? Why should the Gothic encrusted carved surface—supplanting, as it does, the broad level surface of Grecian Architecture, necessarily entail a dark staircase, the entrance to which is in an obscure and unsuspected corner? Why should the concave beauty of a Gothic, in the endeavour to distinguish itself from the convex charm of a Grecian molding, lead to a draughty, cold, cheerless Court—the acoustic properties of which form the ground of so much just complaint? When Mr. Hope has answered these three simple questions of plan, as regards

Mr. George Edmund Street's Law Courts, he may freely discourse on the "clothing with all needful forms of beauty," which, he so ingenuously informs us, is "the Gothic Method."

Again, why should the fact that a man who had such a love, it is said, for *Gothic* Art, but who, nevertheless, did not object (as the real artist would) to work, at the bidding of an employer, in the *Classic* Art, be relied upon as an excuse for what we find in The Foreign Offices, Whitehall? A true lover of Gothic Art, who had given his soul to that one grand development, would not, on any consideration whatever, set it aside for a style with which he had not the least sympathy: and, therefore, when the matter becomes simply a commercial transaction, it is improper to urge as excuses for defects, the fact that Sir Gilbert Scott worked in a style he did not like.

Who can say, with justice, that because Classic Art is employed, *therefore*, The Foreign Office should present a dull, heavy, ill-proportioned Exterior, devoid of all traces of skilled conception, and an Interior containing the objectional features which were brought out in the Evidence given before a Select Committee of the House of Commons on Public Offices and Buildings (Metropolis), 1877.

Again, take the Natural History Museum, a grand specimen of what, for the want of a better word, may be termed The Victorian style—a magnificent pile, with an exterior which would, without any other work, proclaim Mr. Alfred Waterhouse a distinguished Architect of the 19th Century. Here the Architect is working in his own style, with his own favourite material, Terra-cotta; he has a large open space, and, unhampered and unfettered, proceeds to place upon it a Museum, with all, and more, of the Exterior merits I have outlined, but with an Interior which is a palpable mistake. The noble and expressive Exterior is

only consonant with the wealth of the nation, but to extend the coloured material of the Exterior to the Interior, to occupy with ornamental Piers of considerable area, spaces which should have been reserved for objects of Natural History, to depress the Galleries by intricate deeply-molded Ceilings, in a word, to enrich and over-load the interior with architectural display, is to forget entirely the purpose of the building. There is created in this Museum a painful impression that objects of exhibition are of very little moment indeed, compared with the Architecture. Grand Staircases, Landings, Hall and Corridors, with waste of space meeting one at every step, are the striking features of this interior, and after a careful survey of it—bearing in mind the uses to which it was always destined to be put—it is impossible to avoid the expression, what a costly architectural work to produce such a little exhibition space! There is to my mind also, a distinct error in judgment in encrusting the piers and enriching the moldings, &c., with terra-cotta representations of Birds and Animals; the Museum itself is for the exhibition of birds and animals, and, however pardonable and appropriate such representations may be in the Exterior, they are certainly not so in the Interior. Again, for the reception of the fine Skulls of Elephants which are exhibited here, have been provided elaborate Mahogany French polished, molded, and panelled pedestals, as if the Pedestal was the object of exhibition—the Grand Skull an adjunct. So it is all through the building; instead of simple architecture of good line and proportion, neutral in colour, with an absence of all which would tend to divert attention from the Natural History Exhibits, we find elaboration of detail, and obtrusiveness of coloured material, pressing itself forward at every point —the Architect is everywhere, the Student of Natural History nowhere.

These three important works were executed by the first Architects of the day. Each is in a different style, two in which the Architects worked in their own favourite style, the other not, but all three containing grave defects, and defects which cannot, by any stretch of the imagination, be attributed to the employment of any particular style. I therefore return to my proposition that it is to the *Architect* and not to the *Style*, we must attribute success or failure, and that for whatever purpose a building is intended, a convenient, well lighted and well ventilated plan, is as easy to be secured in the Classic as it is in the Gothic, and in the Gothic as easy as it is in the Classic, with the simple proviso only that the Architect is Master of his Art.

We may all have our particular fancies as regards Architecture; the refined taste of one leads him to the Grecian style, whilst the passions of another favour the Gothic style, but it is quite certain that only honest work *lives*. The cravings of an age for *Novelty* will always find ready response, but ere the din of the trowel has died away—the fashion changes—only spurious art is left, and the exclamation then is, What could we have been about to have tolerated it for an hour? Take the so-called Queen Anne Revival,—barbarous in its conception, it has for External effect bad outlines, weak details, and examples of extraordinary ugliness, which, for a better word, its Architects call *originality;* long, lanky windows, broken up by heavy, meaningless, sash bars and transoms, into puny squares; gables of every conceivable pitch and outline; chimney stacks uselessly high and gawky; door-ways absurdly low and mean, ornament stuck on the face of the work without any apparent motive or idea; drip stones and hood mouldings artfully constructed to retain London soot, so that it may be all washed down the surface of the front at the first shower of rain; cills equally cunningly contrived to secure

a similar result; joints of brick-work so wide that, except for the colour, a doubt would arise as to which is the joint and which the brick; the whole covered by high pitched roofs dodged into numberless breaks to make them "picturesque," to make them expensive, and to make the rooms beneath unbearable. The interiors (after passing the porch, made sufficiently low to impress upon the visitor feelings of *Humility;* this is really what the extravagant Queen Anne Architects say) are conspicuous for intricacy of plan, and for queer nooks, crannies and corners, awkward for furniture and worse for comfort; to use the words of Walpole, "True taste is made to give way to extravagance and show."

Fortunately, however, the Architecture of this Age will not be judged by the Style of No Age, and No Country, which its so-called Architects are pleased to term "Queen Anne." With the Bank of England, the Club-houses of Pall Mall, the Houses of Parliament, the London University, the National Gallery, the General Post Office, the British Museum, the University of London, some Gothic churches, and many other examples of Taste and Skill, London is not to be despised, from an Architectural point of view, and, with the Tower of London, Westminster Abbey, St. Paul's Cathedral, and Somerset House, we may safely say that the Metropolis contains monuments which are not to be surpassed by any analogous buildings in the world.

Let any person stand on Westminster Bridge at the corner of the Thames Embankment, and look around—at the River, Bridge, Houses of Parliament, Westminster Abbey, and along the Embankment, taking in Waterloo Bridge and Somerset House, terminating the view by St. Paul's Cathedral. I invite anyone to mention a view to surpass it—if to equal it—in any other City in Europe.

This stretch, from Westminster to Waterloo Bridge, should be filled up by buildings of the grandest kind which it is possible to erect in such a wealthy city as this—then London would possess an amphitheatre of Architectural display, commenced by the Houses of Parliament, terminated by Somerset House, not to be equalled in the World.

Again, let him walk through the City and observe the tokens of wealth in its Architecture, through Southwark Street and see its fine collection of Warehouse design. Proceeding westward, he will find many fine and imposing structures, and on the north side of Piccadilly, from Hyde Park to Piccadilly Circus, there have been set up, during the last fifteen years, a series of buildings for commercial purposes, which reflect great credit upon the different Architects engaged. Of variety, and freedom of style, there are ample evidences, but the moral to be drawn from these latter structures is, that with painstaking care and strict attention to detail, it is possible to produce, without enormous cost, Architecture, pleasing to the eye, and well worthy of a place in a city which contains the works of Jones, Wren, Gibbs, Chambers, Smirke, Wilkins, Soane, Barry, Pennethorne, Scott, Burges, Street, and Waterhouse.

Now walk from Piccadilly to Northumberland Avenue. How the Architecture of this Avenue was intended by Parliament to be controlled I have already described. The result can be seen by anyone who chooses to look. I have no doubt that the buildings put up satisfy the requirements of the men who have embarked their capital in them, but that there is the slightest attempt to elevate the art of Architecture it would be absurd to argue. The building erected by John Gibson for the Society for Promoting Christian Knowledge, with the exception of the Dormers, contains that merit which we find in most of Mr. Gibson's

work, but the Grand Hotel at one corner, occupying as it does one of the finest sites in London, and the temporary premises of the National Liberal Club at the other, are altogether devoid of merit, and contain numerous instances of disregard for those true principles of the Art which some call "mere rule," but which are the outcome of the best thought of the best artists the world has yet produced, and cannot be successfully ignored. What the Northumberland Avenue Hotel would have been, we unfortunately have not the opportunity of judging.[1] What the Constitutional Club will be, we can only surmise by reference to the previous good works of Mr. R. W. Edis. Mr. Robert Walker, in the new Turkish Baths, has put up a building which reflects credit upon him, but he cannot be pardoned for his levity with the Orders, in placing the substantial Doric *above* the graceful Corinthian.

The Hotel Metropole is a commanding structure, and in many respects an improvement on the Grand Hotel; but here again is that absence of skilful disposition of the parts, and lack of picturesque outline, which, giving variety, and play of light and shade, constitutes the difference between the work of Art and the mere building.

Opposite the Whitehall Place front of the Hotel Metropole, and with a frontage of between 500 and 600 feet to the Gardens of the Thames Embankment, have been commenced the important block of Residential Chambers for the Whitehall Court Company, and the new building for the National Liberal Club. This grand scheme owes its origin to Mr. Jonathan T. Carr. The Residential Chambers will be erected from the designs of Messrs. Archer and

[1] Since this was written, the Northumberland Avenue Hotel has proceeded from the designs of Messrs. Isaacs and Florence, and promises to equal, if not to surpass, in architectural merit any other building in the Avenue. This hotel and the Hotel Metropole have succeeded in completely dwarfing Mr. Gibson's building.

Green, and the Club from the designs of Mr. Alfred Waterhouse. From the view which has been published in "The Building News," these two buildings, which have been very properly treated as one picturesque and commanding facade, will, I think, fill up with credit to all concerned, one of the blanks in that grand amphitheatre to which I have just referred as extending from Westminster to Waterloo Bridge.

There is one point, which must not be lost sight of, in laying out new Streets, and that is, that when buildings are allowed to be erected to almost any height, the width of the Street must be correspondingly increased. Northumberland Avenue is 90 feet wide, building to building, which, before buildings were erected, appeared of sufficient width, but it will be found, when the buildings are all up, that for a grand avenue this should have been at least 15 feet wider.

Now walk from Northumberland Avenue to Chancery Lane. The Northern end of Chancery Lane was, not many years back, widened, and it was thought that, by degrees, the whole street, as the old houses were pulled down, would have been likewise widened; but next "Stone Buildings" (which are very near the Northern end of the Lane, and the property of the Society of Lincoln's Inn), a large block of Chambers has been erected up to the old line of building —the street is very narrow at this point, the footway is cramped in the extreme, and the easy opportunity for widening at this point, and, by setting back the buildings, and obtaining a wider area, for securing quiet to the Chambers, has been allowed to slip by.

Then on the East side of the Lane, several blocks of Chambers have been erected during the last ten years. They are all of one pattern, and might have been cast from the same mould. They are, as regards every particle pertaining to Architecture, of the most wretched description. I know of no other buildings in London which are so desti-

tute of a single point of merit, and it is to be deeply regretted that they were allowed to be erected.

Of course there are many more buildings in London worthy of attention, particularly in the City, but I mention these three building areas, Piccadilly, Northumberland Avenue, &c., and Chancery Lane, because they are of special interest as regards the control over the Architecture which has been, or omitted to be, exercised by the Freeholders. In the case of Piccadilly, I believe that the designs of the buildings have been submitted to, and received the emendations and criticisms of, the Architects of the different Freeholders. As regards Northumberland Avenue, we know that the Freeholders have not exercised the powers with which Parliament invested them, and as regards Chancery Lane there was I presume nobody to control the Builder (I cannot think that an Architect was engaged), and the result is the wretched design we see there.

I do not, of course, know that Piccadilly would have had less satisfactory Architecture if the control of the Freeholders' Architects had not been exercised over the designs of the Lessees' Architects, nor that Northumberland Avenue would have been improved if the Royal Institute of British Architects had been allowed to enforce compliance with its demands for better Architecture, or that a little experienced pencil and india-rubber would have done good to Chancery Lane; I note the fact of this supervision, and want of supervision, and draw my own conclusions, which are, that, if London is to be provided with good architecture, there *must* be some department of taste and skill to tone down, or elevate, the mad effusions of hair-brained Architects. The painful evidences of ignorance which they often display, and the palpable desires of the Speculator to erect a building, weak from a constructive point of view, and vile

from an Art point of view, in order that he may grind every penny he can out of his transaction, detrimental alike to the suffering occupying tenant or sub-lessee, to the Public taste, and to the Reversioner, seems to render this quite necessary. Some Architects design and construct badly because they do not know better, others do the same because, either from their own ability, or from the recommendation of friends, they have so much to do that they can scarcely *glance* at their Assistants' drawings, let alone think over them. How is it physically possible that an Architect, with thirteen Cathedrals under his charge, and numerous Churches and residences all over the Country, can give any attention whatever to a tithe of them; but if the Public is so foolish as to go to these men so overloaded with work, then the Public must continue to suffer those heartburnings which they throw back on the heads of the profession generally, bringing it into disrepute, because one or two men have not the honesty to tell a client that they are unable to give his work that attention which he has a right to expect and demand, for the Commission which he on his part is required to pay.

But there is another and very important element which, in a very short time, must press itself upon the building Public, and upon Architects; it is that the quality of the workmanship, generally, is most certainly deteriorating, while at the same time the expense of building is gradually increasing. The reason of this is, that the Technical Education of our Workman may be said to be *nil;* as soon as a man can lay one brick upon another he terms himself a Bricklayer—but ask him to construct a vault, a groin, or a niche, and he will, in confessing his inability, regard you with mixed feelings of awe and displeasure; and so it is with most other trades; the old long terms of apprenticeship are forgotten, men endeavour to pick up on the build-

ing the intricacies and details of a trade which can only be truly acquired by apprenticeship in the workshop, the result is, that what they do is done badly—it has to be done over again, and perhaps over again, and as the Builder is very seldom at the loss of this waste of time, the client has to pay double or treble the amount he should pay, and then, although he is charged the price of first-class skilled labour, he only obtains the crude handiwork of a novice. Further, if the work is what is called "Day Work," he pays this full price for skilled labour for so many hours a day—but whether he gets a corresponding fair day's work for his money, is another matter, and as the Builder gets a profit on every hour the man wastes, as well as on every hour he works, unscrupulous Builders care little about the matter, and so the expenses of carrying out a small work become intolerable, and a man thinks twice before he allows a builder to twice enter his house.

Client depends upon Architect for good work, Architect depends upon Builder, Builder upon Foreman, Foreman upon Workman, all are deeply concerned; the future Building trade is deeply concerned, that this mutual dependance shall be satisfactory, but this can only be attained when each of the party does his share honestly—when each has acquired a proper knowledge of his work, when Builders cease to be merely employers of labour at so much profit, without the slightest technical knowledge of the trade they announce over their Gateways, when each is anxious to return, for a fair day's pay, a fair day's work; secure this, and there will be some hope for the sound, honest work of a few hundred years ago, then building works will be within the compass of the pockets of a greater number of patrons, then Architecture will become a Living Art, instead of the Deadened Sham, into which, in many cases, it has been allowed to fall.

THE ENGINEERING CONSIDERATIONS.

The Engineering Works consequent upon the reconstruction scheme, would consist, principally, of the Arrangement of Levels of the New Streets; the Arches, Viaducts or Bridges connected therewith; the Excavations for, and the Construction of the New Sewers; the Removal of Soil which might be found to be impregnated with objectionable matter; the Formation of the Subways, Vaults, Roads and Footpaths; the Lighting of the Streets; &c., &c.; but the greater part of the works connected with such a scheme as is herein proposed, would fall under the direction and supervision of the *Architect* rather than that of the *Engineer.* The works, however, which would more properly belong to the Engineer, will be found in detail on the drawings showing the character of the streets I would construct, which drawings are appended to this Essay.

THE SANITATION, STREET RE-ALIGNMENT, AND RECONSTRUCTION OF THE CENTRAL PART OF LONDON.

This portion of the Essay is accompanied by Drawings which I have specially dealt with under the head of "Description of the Drawings." These drawings will be found to include, not only the Reconstruction scheme, but the consequent Removal of the Old and Poisoned Soil, the Rearrangement of Levels, Subterranean ways for the accommodation of Wires, Pipes, Sewers, &c., and plans showing the manner in which the Poorer Classes should be housed. These drawings, taken with the provisions under the heads of "Sanitary Considerations" and "Architectural Considerations," are intended by the author to close up and complete the whole Essay.

"We possess the wherewithal to purchase Kingdoms; we see every day what is wanting to our Capital, and we content ourselves with murmuring . . . We rush to the theatres and are indignant on entering them in a manner so inconvenient and so disgusting, to be so uncomfortably seated there, and to leave them with more trouble and confusion than when we entered. We blush, rightly, to behold Public Markets Established in Narrow Streets, spreading dirt and infection. We have only two fountains in good taste, and they are far from being advantageously situated; all the others are worthy of a Village. Immense districts require open spaces, and the centre of the town, obscure, confined, hideous, represents a period of the most shameful barbarism.

We say this without ceasing, but until when shall we say it without remedying it? . . . The meanness of ideas, the fear, still more mean, of a necessary Expenditure, rise up to contend with those projects of grandeur which every good citizen has made to himself a hundred times. We are discouraged on thinking what it will cost to raise these necessary monuments, the greater number of which, becoming every day indispensable, must be executed in the end, whatever they may cost, though, in the main, it is very certain that they will cost nothing to the State. . . . . What! shall it be only at the last extremity that we do something great? If half Paris were burnt down we should rebuild it, rendering it superb and commodious; and we are not willing to give it, to-day, at a thousand times less cost, the accommodation and magnificence which it needs! Yet a similar enterprise would redound to the glory of the Nation, would be an immortal honour to the municipality, would encourage all the Arts, and, far from impoverishing, would enrich the State. It would, moreover, accustom to work a thousand worthless loafers, who sustain a miserable life in the infamous trade of begging, and who still contribute to dishonour our Capital. . . . May Heaven send some man, some Statesman, sufficiently zealous to undertake such projects, with a mind sufficiently firm and enlightened to carry them out; and that he may have trust enough reposed in him to make them a success! If, in our immense City, no one can be found to do this; if we are contented to talk of it at table, to utter useless vows or, may be, impertinent pleasantries, *il faut pleurer sur les ruines de Jerusalem.*"

So wrote Voltaire, in the middle of the eighteenth century, in his article entitled "Des Embellissements de Paris," and in making the quotation, in his Paper on the Education and position of Architects in France, read before the Royal

Institute of British Architects on February 4th, 1884, by Mr. W. H. White, he cautions the younger Members of the Institute to "take heed that they do not confound a description of Paris in 1749 with the London of our own advanced era of Civilization and Art."

I am not at all sure, though, that Mr. White's caution was at all needed, but I am sure that if he will make the subject of London a study as regards its Thoroughfares and Sanitation; if he will, any afternoon, perambulate the City, or even the Strand, and visit the Courts and Alleys of London, he will find that Voltaire's reference to Paris might, with the greatest truth, be applied at this moment to many parts of our own Metropolis. We all know how France has been improved since Voltaire wrote, and how much is continually being done to further improve it. Only in November of this year we find from a statement of the Minister of Public Works, with regard to the execution of Public Works, planned by M. de Freycinet when in office, that a sum of £35,160,000 remains to be spent on Canals, Rivers, and Ports, of which £28,520,000 was for Canals, £4,000,000 for Ports, and £2,640,000 for Rivers, and that a further expenditure of £4,000,000 for Ports, and £1,200,000 for Canals has since been found necessary. It is proposed to raise this money by loans to the State from the Chamber of Commerce, these loans to be paid by Annuities, commencing in 1887, and spread over periods of 10, 15, and 20 years. The additional expenditure to be spread over a longer period, and to be provided for out of current revenue.

I have said that the words of Voltaire, just quoted, may be truly applied to London at this moment. We possess the wherewithal to purchase kingdoms, and certainly expend large sums in subduing some. I am not sure that we have even *two* fountains in good taste, some say we have not *one;* as regards the need of open spaces and more

healthy districts, that certainly will not be contested; and the good it would do for the many thousands who are now out of employment, and the encourgement it would give to all the Arts, equally will not, I apprehend, be considered subject of argument.

Of course there will be those who will say that any such scheme as is here proposed is entirely out of the question, and that, as London has gone on very well for so many years, why cannot it be let alone; the old cry of interference with private property will be urged, and the result may be that, as in the case of rebuilding the City after the great Fire, the scheme was upset, and the golden opportunity for ever lost, because of the obstinacy of some of the Citizens not to allow their old properties to be altered, and new premises to be built for them within a short distance of their old sites, many of them holding out, as they would now, that their new premises must be built on the foundations of the old. To these, future good for temporary present inconvenience, has no weight, they forget that the increase of population, if it goes on in the same proportion as it does now, must shortly render obligatory, that which might now be done with quiet fairness and just compensation for disturbance: every year the difficulty of improving London becomes greater, and every year the difficulty of adequate provision for the disturbed is increased. In 1880-81, 25,000 new houses were built, and 70 miles of streets added to what has been termed Greater London, the occupants of those houses, and the traffic of those streets pour into the City, and render difficult, irritating, and slow, that circulation upon the rapidity of which important time, money and temper depend. These short-sighted persons forget that a fine City attracts the World, adds to its commerce, and thereby to the wealth of its inhabitants, and thus *returns* a part of the expenditure on its magnificence.

apart from the grand accomplishment which should be dearest to the heart of every Citizen, viz., *the lowering of the death rate.*

It is no more than the relation of a truism to say that the Increase of the Traffic of London is so startling that the corresponding Increase of Thoroughfare *must*, sooner or later, be provided. The streets of the City, the Strand, and of the West End, by the enormous increase of omnibuses alone, are congested to the full. The new lines of relief laid down by the Metropolitan Board do not appear to touch even, the heavy demand on the more direct lines. "384,000 pedestrians, and 75,000 vehicles pass over the Metropolitan Bridges daily, the number of Pedestrians increases at the rate of 4½ per cent. per annum, whilst the Vehicles increase at the rate of 13 per cent. The traffic on the Metropolitan, the Metropolitan District, and the North London Railways together increased between 1871 and 1881 from 79 millions to 136 millions per annum, or to 373,000 passengers per day."

If the Capital is badly laid out, and its thoroughfares and houses unsuited to the requirements of the day, a bad example is set to the suburbs, which are not slow to profit by using every foot of available ground for building upon, and as what are now suburbs will soon be absorbed in the mighty Capital, the evil is spreading even in those parts which are, to-day only, being built upon, and which at least might be, but are not, made the subject of stringent regulations as to open spaces, and widths and directions of thoroughfares. We are even behind our fathers as regards the healthy outlay of our hitherto unbuilt-on lands, the Squares and Crescents of half a century ago, forming as they do such valuable lungs for the localities in which they are situate, are now, excepting some brilliant exceptions at the Outer West of London, nearly lost sight of in new

building undertakings, the owners of the land demand such exorbitant ground rents, that the unhappy speculating builder, or tradesman, has to crowd upon it as much remunerative bricks and mortar as he possibly can, to recoup him for his rent and expenditure; and there can scarcely be a doubt that upon some of the Ground Landlords of London rests the responsibility for all the blunders of Disposal and of Architecture, which are now beginning to alarm thoughtful persons.

But, even in places where the ground landlords or the legislature made careful provision for open space and good width of thoroughfare, the apathy, or worse, of those whose duty it was to maintain compliance with the intentions clearly laid down, has permitted the overthrow of the good, and the incursion of bricks and mortar on land intended to be Open Space. Take two examples:

In the Reign of Charles the Second, an Act was passed containing the following clause—"There shall be left a continued tract of ground all along from London Bridge to the Temple, of the breadth of forty feet of assize, from the North side of the River of Thames, to be converted to a Key, or public and open Wharf," and, to ensure this, due provision was made for the removal of all buildings which stood in the way of the open space. From a survey which, by Royal Commands, Sir Christopher Wren made on January 25th, 1670, he reports the various obstructions and erections then existing on this forty feet Quay, and after many and repeated complaints of encroachments, we find that on July 10, 1821, an Act passed both houses, to repeal so much of the Act of Charles II., as restained the erections on the forty feet Quay; the great mover in securing the passing of the Act of 1821, being Mr. Charles Calvert, *a partner in the firm whose obstructions and erections on the Quay had formed the ground of complaint.*

Then there is the case of the Euston Road, referred to by Mr. Arthur Cates, in the discussion which took place on Mr. Westgarth's Paper read at the Society of Arts, on February 6th, 1884. This road is part of the "New Road" which was formed from Paddington to Islington in 1757—under the powers of an Act of Parliament, 29 George II., cap. lxxxviii. By this Act the erection of buildings within 50 feet of the margin of the road was prohibited, and the parochial authorities were empowered, upon obtaining an order from a magistrate, *to pull down and remove any such erection as a common nuisance.* Now had this wise prohibition been maintained, had the forethought of the legislature been respected by those appointed to carry it into execution, we should have had a splendid Boulevard as a fitting approach to the heart of the Metropolis; the residents would have had the pleasant front gardens laid out for their enjoyment when the road was first formed; the surrounding inhabitants would have reaped all the benefits of healthy open space; but because by inexplicable carelessness, or worse, the parochial authorities have neglected their duty, we have in place of all which would have been pleasant, the unpleasant, unsightly, and disgraceful encroachments on to the very edge of the footway, which now distinguish the Euston Road, as they do also the Hackney Road, and other roads which perhaps were formed under similar wise conditions to those of the "New Road." The difficulty, as I have said before, is not so much in securing the passing of an Act, as in seeing its provisions duly respected.

It is rare, indeed, that we find a record of compulsory performance of the provisions of an Act such as the following:

In the year, 1605, the second of James I., it was commanded that all persons henceforward should build all

their fore-front and windows either of brick or stone, "as well for decency as by reason all great and well-grown woods were much spent and wasted so that timber for shipping became scarce." A leather-seller in St. Paul's Church-Yard had constructed his dwelling, near the North Gate, of Timber, and was *compelled to take it down and re-build it in the prevailing fashion.*

Now if a few examples like the above were occurring every now and then in the Metropolis, if the provisions of Acts of Parliament, the enforcement of which, merely from apathy, is neglected, were courageously taken in hand, we might hope for a speedy and satisfactory improvement; London possesses all the necessary material, as regards position, accessories, and extent, for a City such as the world never saw; but to secure this *now;* to give the Metropolis healthy Open Spaces; to form grand Streets; widen existing Streets; afford proper provision for Public buildings, and proper dwellings for all the inhabitants—in short, to make London Safe, Healthy, Commodious and Elegant, will require a demolition and clearance, which it is impossible to contemplate without fear and trembling: that this grand conception, however, is practicable, that with vigour and energy it *can* be accomplished, will, I trust, be proved by this Essay and its accompanying Drawings; and I echo the words of Voltaire, and say, "May Heaven send some man, some statesman sufficiently zealous to undertake such projects, with a mind sufficiently firm and enlightened to carry them out; and that he may have trust enough reposed in him to make them a success!"

DESCRIPTION OF THE DRAWINGS SHOWING THE WORKS PROPOSED.

DRAWING NO. I.

THIS drawing shows, generally, the main features of the Scheme, and, before proceeding to a detailed description of it, I may say that I first studied a Map of London, and, with it in hand, perambulated the Metropolis; by this I was able to clearly see the Pressing Need of Improved Lines of Communication. I then took the Uncoloured Skeleton Ordnance Map, and Drew and Coloured upon it the scheme as it is now shown. I have drawn in some of the new Streets which have been formed since the Map was made by the Ordnance Office, but as it is only corrected down to 1865, many little discrepancies exist, which I had not time to survey and correct, besides thinking that, for the purposes of an Essay, the plan is sufficiently accurate.

Colours.

Prussian Blue	indicates	Existing Water.
Royal Blue	„	Proposed Public Swimming Baths and Ornamental Water.
Hooker's Green	„	Parks, Squares and other existing Open Spaces.
Emerald Green	„	The proposed new Open Spaces and Public Recreation Grounds.

Strong Black Line with Red Edging indicates Widening of Old and construction of New Thoroughfares.

All Roads are tinted with Burnt Sienna.

The Pink Ground indicates *Entire Clearance.*

The Streets, Buildings, &c., *Retained*, however, on the Pink Ground are as follow :—

Farringdon Road.
New Bridge Street.
Holborn Viaduct.
St. Martin's Le Grand.
Cannon Street.
Queen Victoria Street.
King William Street.
Moorgate Street.
Railway Stations.
Docks.
Holborn Town Hall.
The Guildhall.
St. Paul's Cathedral.
Bow Church.
The Mansion House.
The Bank of England.
The Royal Exchange.
The Monument.
The Custom House.
The Tower of London.

Many of the Churches and other buildings of historical interest or importance.

THE NEW LINES OF THOROUGHFARE.

The object has been to secure

1. Principal Streets traversing London from East to West, North to South.

2. Subsidiary Streets, within reasonable distance of Principal Streets, and parallel thereto, to relieve Traffic on Main Streets, particularly when converging towards Central London.

3. Diagonal Streets, branching into Principal and Subsidiary Streets.

4. Retention of old Streets when of sufficient width, but with new approaches to them from Main Central Streets.

Main Features of the Plan.

1. Principal Streets to all Railway Stations.
2. Principal Streets to all Bridges.
3. Opening up of Parks.
4. Opening up of Theatres.
5. Opening up of Churches.
6. Widening of The Thames, and formation of Quays 100 feet wide on both banks.

Detail of the Plan.

(See Black Figures on Plan.)

1. New Street from Hampstead Road, opposite Ampthill Square, into the Regent's Park, opposite Chester Road.

2. Continuation of St. Andrew's Place, Regent's Park, into Albany Street.

3. Continuation of Portland Place, into the Regent's Park, in a line with the Broad Walk.

4. New Street from Marylebone Road, diagonally through to the Park Road.

5. New Street from the Midland Railway Station, diagonally through to Gray's Inn Road, and Farringdon Road.

6. New Street from Oxford Street to the British Museum; opening up also the Entrance of the existing Street from Oxford Street to Shoreditch.

7. Widening of the South side of Oxford Street, from High Street, St. Giles', to the North-East part of Lincoln's Inn.

8. New Street from Holborn, in a line with Gray's Inn Road, to Fleet Street, and thence to Blackfriars Bridge.

9. Continuation of the Widening of Gray's Inn Road, Northwards, to King's Cross.

10. Continuation of Bedford Row into Holborn, and thence to Lincoln's Inn Fields.

11. New Street from Holborn, opposite continuation of Bedford Row, through line of Great Queen Street, Long Acre, and Cranbourn Street, into Piccadilly.

12. New Street from Holborn (at Little Queen Street) to the Strand, and on to Waterloo Bridge.

13. New Street from South end of Tottenham Court Road, at its junction with Oxford Street, to the Strand, and on to Waterloo Bridge.

14. New Street, from the same point as last, to Trafalgar Square.

15. Opening up of Covent Garden Market by removing surroundings shown.

16. Widening the South end of Bedford Street, Strand.

17. New Street from Charing Cross, in a line with the Strand, through to line with The Mall, St. James' Park.

18. Widening Charing Cross, at Northumberland Avenue, to the present width of Whitehall.

19. Removal of block of buildings between Charles Street and Great George Street, West side of Whitehall.

20. New Street from Westminster Abbey, North-East corner, to Millbank. Removal of St. Margaret's Church.

21. Widening of Cockspur Street, on its Southern side.

22. Continuation of the Haymarket, Southwards, by a new Street, into The Mall, St. James' Park.

23. Continuation of the Haymarket, Northwards, by a new Street, into Oxford Street.

24. New Street, Coventry Street to Regent Street.

25. Continuation of Pall Mall, Westwards, by a new Street, into The Green Park.

26. Continuation of St. James' Street, Southwards, by a new Street, into The Mall, St. James' Park.

27. Widening of Berkeley Street, on its Western side, into Piccadilly.

28. Diagonal Street from New Bond Street, into Grafton Street, and thence to Berkeley Square.

29. New Street connecting Berkeley Square with Grosvenor Square.

30. New Street from Piccadilly (at Down Street), into Great Stanhope Street.

31. Continuation of Great Stanhope Street, into Charles Street, Berkeley Square.

32. Continuation of Park Street into Park Lane.

33. New Street (in line of James Street) from Victoria Street to Buckingham Gate.

34. Widening and continuation of Artillery Row from Victoria Street, into Rochester Row.

35. Widening and continuation of Lower Belgrave Place, at its Southern end, into Upper Belgrave Place.

36. Widening of the Strand, on both sides, and also Fleet Street, through to the new Square of St. Paul's Cathedral; removing St. Clement's Church.

37. New Street from The Angel, Islington, to junction of Richmond Road with Caledonian Road.

38. New Street from the City Road, near Macclesfield Street, to Islington Green.

39. New Street from near Beech Street, Barbican, to High Street, Shoreditch, and on to Bethnal Green Road.

40. Widening of Green Street, Esmond Road, and Roman Road, on both sides.

41. Widening of Prospect Place to width of Bishop's Road into Victoria Park.

42. New Street from Bow Road, at Coburn Street, into Victoria Park.

43. New Street from Commercial Road East, near Limehouse Basin, to Mile End Road, and on to Cambridge Road.

44. New Street from Whitechapel High Street, opposite Leman Street, into the Bethnal Green Road.

45. Widening of Leman Street, on both sides throughout its length.

46. Widening of Aldgate High Street, on its South side.

47. New Street from Liverpool Street Station—Bishopsgate Street—to meet the Kingsland Road.

48. THE PART TINTED PINK—being the part suggested to be entirely cleared, with the exceptions before stated.

This plan has Main lines of Streets running East and West, North and South, and diagonally: the smaller streets being parallel, and affording large Square Building Sites and Dwellings, with Open Spaces, and Recreation Grounds, for the health of the Inhabitants. St. Paul's Cathedral is opened up, and stands in the midst of a square about 1500 feet long, with a mean width of about 500 feet. Roads, 100 feet wide, skirt the Square, which would be separated from the Roads by Granite Posts, at convenient distances, and not by Railings.

Large Sites, isolated, and surrounded by wide thoroughfares, have been set out for Banks, Insurance Offices, and other large and important Buildings.

A New Street parallel to the Quay, and 100 feet wide, runs from New Bridge Street, Blackfriars, to the Tower. Between this New Street and the Quay are large square blocks of Warehouses.

Billingsgate Market is opened up—a wide open space is carried through at the North of it and the Customs House,

and a New Market, for *Dried* Fish, might be built at the East side of the Customs House.

The Tower railing would be altered as shown, and a large Square formed on part of the site of Trinity Square.

A New Subway, or Bridge, should be built across the Thames here—and Tower Hill widened, on the East Side of the Tower, to meet this Subway or Bridge.

Eastwards of the Tower, main thoroughfares 100 feet wide are carried along to Limehouse—providing large Square blocks for Warehouses, and Dwellings, with Open Spaces and Recreation Grounds.

Large sites are cleared for the extension of St. Katharine's and The London Docks.

The remainder of the Plan as regards outlay speaks for itself, and the other features of it are as follow :—

A. Sites for Churches, in the midst of Ornamental Gardens.

B. Sites for Technical Schools and Public Libraries, in the midst of Ornamental Gardens.

C. Sites for Public Swimming Baths for Men and Women, and Gymnazia, next Ornamental Gardens.

D. Sites for Theatres, in the midst of Ornamental Gardens.

E. Sites for Mortuaries, in the midst of Ornamental Gardens.

F. Large Recreation Grounds, with shallow Ornamental Waters for children to float model boats and yachts.

G. Space for heavy Guns to command the bend of the River in case of Invasion.

H. Arrangement of Plan as shown on *Drawing No.* 2. Warehouses and Manufactories in front, with Dwellings for the Workpeople at the rear, and Recreation Grounds in the centre.

N.B.—Where *black dots* are shown on the Plan, around the Open Spaces, they indicate *Posts*, so that there would not be any railings round these open spaces—only Posts about 4 feet high and 6 feet apart.

The blocks have been set out in the most varied manner as regards size—so as to suit the various requirements. Note the different sizes of the building areas, &c, in the blocks H.

I have not considered it within the province of my Essay to calculate the probable cost of carrying out the Scheme. If the matter ever passed into the region of practical probability, it would be necessary, of course, to make those enquiries into present holdings, &c., and other calculations of Expenditure and Return, without which the Scheme could not be floated.

One matter, however, I will mention here. Whatever is done, or not done, I think that the House of Correction and the House of Detention, Clerkenwell, should be cleared away, and the sites used for Open Recreation Grounds for inhabitants of the locality, and for, perhaps, a Public Library, Public Swimming Baths, and Laundries, or one or two of the other much needed dwellings and additions which I have mentioned in this Essay. The scenes outside the House of Correction, when the Prisoners are liberated, are certainly not fitted for Central London, and the sooner these two Prisons are treated like old Horsemonger Lane Gaol, the better for the inhabitants of London generally and of Clerkenwell in particular.

DRAWING NO. 2.

This Drawing is an enlargement, to a scale of 32 feet to the inch, of the block marked H on Drawing No. 1. The other blocks marked H might be similarly arranged, but to different dimensions.

The Plan shows suggested Sites of varied size as they might be leased, and it will be observed that the large Sites for Warehouses and Manufactories are in front; then an open space 40 feet wide; then the dwellings of the persons employed, perhaps, in the front warehouses; then an open area 5 feet wide; then the footpath, roadway, &c.; and then the Public Recreation Ground, with Ornamental Water in the Centre. An enlargement of one of the blocks marked Z, for Workmen's Dwellings; and an enlargement of a block marked X, for Single Men Lodgers; are shown on *Drawing No.* 3.

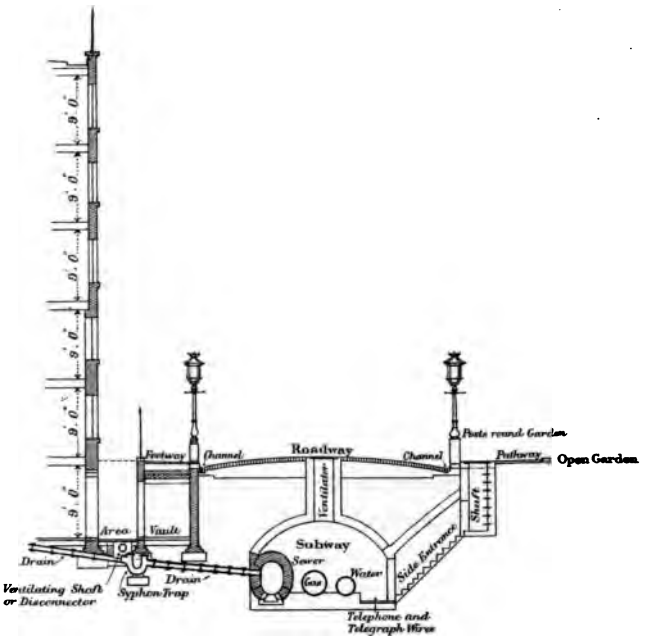
This Plan also shows the suggested Roads, Footpaths, &c., and the Lamp Posts and Gullies.

The Section shows the height of the workmen's dwellings (each floor 9 feet clear in height), the Open Area; Vaults under footway; Road; Subway; &c.

As regards *Widths of Roads*, I should propose that the greatest in London should be 120 feet—the others varying in width, according to position and requirements; some 100 feet wide, some 90, some 80, some 70, some 60, but none less than 60 feet wide—*building to building*—except in very out of the way parts.

Portland Place has a total width—*building to building*—of 126 feet, made up of open area on each side 10 feet wide, footway and curb 17 feet wide, roadway and channels 72 feet wide. Northumberland Avenue is 90 feet wide, and the new Gray's Inn Road Widening 60 feet wide.

No 2.



SECTION ON LINE A. B.

10 5 0 10 20 30 40

Scale of Feet for Section.

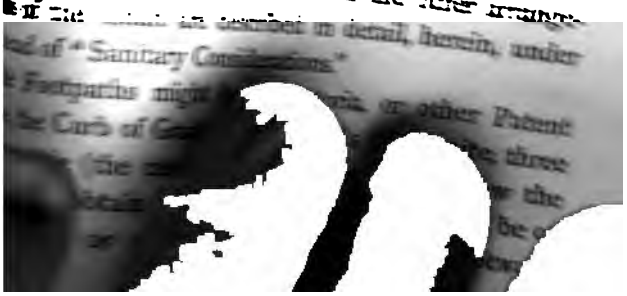
PROPOSED RECONSTRUCTION OF CENTRAL LONDON.

0 25 50 100 150 200 250

Scale of Feet for Plan.

Wm Woodward.
7 Duke Street. Adelphi. W.C.

E. Weller, Litho. London.



curb, channels and roadway, should have a good foundation of Concrete.

The Material arising from the Demolition of the Old Buildings, with the best of that arising from the Excavations for Subway, &c., might be ground in a Pug Mill, and used in the new works. This mixture of material with good Portland Cement or Lime, makes excellent work of the strongest kind. Mixture of Coke Breeze and Portland Cement is now used very largely indeed for steps, pavings, walls, &c. This is an industry capable of great development, and I should propose to take advantage of it to a very large extent in the construction of the Subways, Sewers, Walls, &c.

The Posts, separating the road from the footway of the Public Recreation Ground, might be of Iron.

Drawing No. 3.

This Drawing shows an enlargement, to a scale of one-eighth of an inch to the foot, of a block marked Z on Drawing No. 2, and of a block marked X on the same Drawing.

These plans speak for themselves, and I shall only, therefore, direct attention to the Convenience, Light, Ventilation, &c., shown by them; and to the provision of Three, Two, and One room Accommodation; so as to, as far as possible, *vary* the accommodation to suit *varied* requirements.

Each set is *self contained*, having its own Water Closet, (constructed as a Combination Water Closet and Slop Closet,) Sink, &c. I do not at all agree with the usual plan of Workmen's Dwellings, where the Water Closets and Sinks are placed on the Landings; they are then common

to all the inmates, and the arrangement is detrimental to convenience and morality.

In my plan the Water Closet is *outside* the set, but inside the entrance door, and by the section at the side of the plan will be seen the method of obtaining light and ventilation for the W.C., which is not, therefore, directly in front of the building.

In the 40 feet open space at the rear of the Dwellings, I have placed the Washhouse, and the covered Play Place for children.

The plan for *Single Men* or *Single Women* Lodgers, provides for that numerous class who really can afford to pay only for *One living room.* It will be seen that all these rooms and corridors are well lighted and ventilated. Each room has its Fireplace, Sink, and Slop Sink, the W.C.'s, Urinals, and Lavatories, being placed at the end of the block, and ventilated by open areas.

A large Kitchen or Hall is provided in which the occupants might cook their food—and eat it there, or they might cook their food and take it to their own rooms, and eat it, or do both in their own rooms.

A large Library and Reading room is also provided, and this would be found to be a great boon and advantage to the occupants of the Dwellings.

Open Yards or Gardens are also provided within the block, and, in addition, there is the 40 feet open space at the rear.

The Dressers and Cupboards, shown on the plans, should be strongly made, and become Fixtures of the Dwellings.

The Dwellings could be *warmed* by hot water-pipes, fed from a boiler to be fixed in the Basement, or at the back (in the case of the Single room Dwellings) of the large Range in the Kitchen.

I am of opinion that every step possible should be taken

The Subway shown on this Section is very spacious, and contains the *Sewer* 4′ : 6″ × 3′ : 0″. The Sewers in the large thoroughfares would, when taking the sewage of the subsidiary thoroughfares, be correspondingly increased in size. I have shown the Sewer to be nearly *Egg-shaped*, in order to obtain the greater impetus which the reduced section at bottom secures. The Sewer constructed by the Metropolitan Board under the Thames Embankment, is *circular*, and 8′ : 3″ diameter, but I think it is now admitted that Egg-shaped sewers are the best for working.

The Subway, constructed by the Metropolitan Board under the Thames Embankment, is *over* the Sewer, and in my opinion this is objectionable. It would have been far better to have constructed the Sewer *in* the Subway, so that when repairs were required, it could have been easily got at.

The remaining part of the Subway shown on the Section, is taken up with the Gas Main, Water Main, and Space for Telegraph and Telephone wires, &c.

The Side Entrance is shown to give easy access to the Subway. Side Entrances would be placed at convenient distances apart.

The Subway is ventilated by the Shaft shown. Shafts could be placed at convenient distances apart.

The Drain from the Dwelling is shown connected with the Sewer, but *intercepted* by the *Ventilating Shaft*, the Syphon-trap is on the Sewer side, and the other arrangements of the Shaft are described in detail, herein, under the head of "Sanitary Considerations."

The Footpaths might be of Victoria, or other Patent Stone, the Curb of Granite, the Channels of Granite, three courses wide (the centre course sunk one inch below the other two to obtain a good flow). The Road might be of Wood blocks or granite, and the whole of the footway,

THE FINANCIAL ASPECT OF THE SCHEME.

"How are you going to find the Money?" is a question which is easily put, but is not so easily answered; and yet *without the money* to carry it through, a scheme, such as this Essay shadows forth, can only be added to the long list of those particular qualities, with which the Road to Hell is said to be paved.

Undoubtedly the Government of this Country is deeply interested in making its Capital as Healthy and Convenient as it is possible to make it; the continued serious loss and annoyance, to which the citizens are daily subjected, cannot go on for ever, and, as all the results of an enormously-increasing population pour into the congested thoroughfares—as the omnibuses are correspondingly increasing in numbers, and, by reduced fares, invite day by day a still further demand for more vehicles, that vast alterations in the *thoroughfares*, at least, *must* be made within a very short period, is patent to the casual observer.

Not only the Government of the Country is concerned, but the Metropolitan Board of Works (who should be the first to direct to the subject the serious attention of the Government) fails in a very important part of its duty when it sits still whilst the difficulties of the situation grow stronger every day. The Corporation of the City of London, also, would appear to attach more importance to a new Below Bridge scheme—which undoubtedly, however, is very much needed—than it does to the alarming condition of the very heart of the City under its charge; and, if these

constituted authorities neglect to boldly meet the emergency, what Body is there in the kingdom, or what Body could be created, with sufficient strength and Capital to start the Reconstruction of Central London?

Mr. Westgarth, in a Letter which appeared in "The Economist" of October 13th, 1883, hinted at a "Government Commission" to secure the realization of the scheme he outlined, and in his Paper published in the "Journal of the Society of Arts" of February 8th, 1884, he exhaustively deals with this important part of the scheme, and suggests a "Central London Reconstruction Trust" as a means of carrying it through.

The two methods suggested by Mr. Westgarth are thoroughly practical, and I see no reason to doubt the accuracy of the conclusions, as regards ultimate profit, at which he has arrived; but I cannot disguise from myself that the vast magnitude of the scheme which *I* suggest would not, I fear, commend itself to a Government Commission, nor would it be easy, in the present uninformed condition of the Public mind, to constitute a "Trust" or "Company" with sufficient Capital to carry through to a successful issue, such an undertaking. That the scheme would be a success can be judged by the fact that the Land in London CANNOT increase in Area, and as the Population is constantly increasing, it necessarily follows that the value of the Land must increase considerably every year. The Public would require *educating* to convince it that the very magnitude of the scheme, carried out as it would be by the Company itself, with all the advantages which building on so large a scale carry with it; with all the benefits arising from the use of the enormous quantities of old brick-work, the result of the demolition, which, with the gravel and sand arising from the excavations for the large subways, would, with the present knowledge of the

uses to which such material could well and properly be put in the form of Concrete, be another important element in the construction of the new buildings and works. I say that the Public would require *educating* before it invested its money in so large a reconstructive Scheme. But if a considerable portion of the required Capital could be shown to be in the possession of or promised to the Company,—if, further, the Government of the Country could be brought to be deeply interested in the successful issue of the work, I think that, with a proper and Detailed Report before it showing, by Drawings, precisely the works contemplated, accompanied by Full Particulars of the Probable Cost of Entire Acquisition; costs of carrying out the Works; and anticipated rentals; and, thus, the Expected Return for the Investment—there would not be any difficulty in securing the flow into the Coffers of the Company, of the millions now lying idle in this rich community.

Then how is this peculiar combination of interests to be brought about: a combination which I would term "The Consolidated Central London Reconstruction Company"? I think it might be brought about with the following aid.

1. The Government of the Country and the Corporation of the City of London being interested deeply in the issue of the scheme, obtain their concurrence to extend to an agreed period the Coal and Wine Duties; thus a certain income would be at the service of the Company, and should its rapid operations appear to lead to the conclusion that the scheme would be completed before the termination of the extended period, it could, if it required it, borrow money on the present value of the Duties for the remaining years, or should the Duties be in the hands of the Metropolitan Board of Works at the time the Income was required, the

Company could, in the same way, borrow money on the Government undertaking to apply the Income from the Duties, when in hand, to the benefits of the Company.

2. I have hereinafter suggested that the property should be acquired and the scheme carried out, under the Powers of the "Lands Clauses Consolidation Act, 1845," and as this Act provides for payment, equal to the value of the existing rates, on all property demolished, it would be in the power of the Company to borrow money on the present value of the *Improved Rates* of the improved locality.

3. The Improvements being those contemplated by the "First Schedule of the Public Works Loans Act, 1875," money could be borrowed of the Public Works Loans Commissioners.

4. Portions of the Funds required being thus obtained on the credit of the State Aid, and the Improved Value of the Rates, there would not be difficulty in obtaining the remainder of the amount required from the following sources:

(A.) Capitalists willing to become Shareholders in the Company.

(B.) Bankers, Insurance Offices, and others, intending Lessees of Sites on the new ground.

Thus would be created varied interests, all involved in the success of the Scheme, and, from the Combination, would be obtained that enormous amount of Capital, practically in hand, without which the *rapidity of execution* so necessary for substantial recoupment, could not be attained.

It might be asked, why should the ordinary speculating Capitalist share in the profits of a transaction in which the assistance of the Coal and Wine Tax had been brought to

bear? and it can well be answered that the money derived from that Tax, would be expended on the carrying out of Sanitary Improvements *for the benefit of the whole community,* and which would not be executed under any ordinary rebuilding scheme.

THE METHOD OF CARRYING OUT THE IMPROVEMENTS.

One great point to be borne in mind in such a vast *Clearance* as this scheme suggests, is the *Disturbance* which must be created to carry it through. I am quite aware that, on the face of it, it would appear that the most serious dislocation of business, and stoppage of traffic, would ensue if the large area, tinted Pink on Drawing No. 1. were cleared

The most costly Improvements have been those where the Clearance has been cramped and restricted. To make any Improvement Financially Successful, a large area *must* be taken in, not only amply sufficient for the formation of the new thoroughfares contemplated, but affording sufficient Building Areas for letting at the Increased Rents which the Improvement has warranted. In many Street Improvements in London, carried out at great cost, the area scheduled has been confined to its very closest limits; the result has been that the Frontagers in the immediate vicinity without any special outlay or taxation on their part, have found themselves in possession of land which yesterday was worth 3d. per foot superficial on building lease, and to-day is worth 1s. 3d. per foot; but, had the large surrounding area (which I consider so essential for profitable result been cleared, the Improver would, as he should, obtain the Benefits of the Increased Value of Ground.

It may be urged that this very clearance of extensive areas, disturbs the whole machinery of a locality; but the system which I would suggest for meeting such an objection is, to Schedule and Purchase the interests of the Freeholders, within say, three years of the premises being

required, but permit the occupiers to remain in them, at the old rents, until within a short time of the date at which they must be pulled down. In the meantime, the occupiers would be made acquainted with the fact that in three years their premises would be pulled down, and that, if they desired it, new buildings to suit their special requirements would be built in the locality; then, if the security of these tenants appeared to the Company to be substantial, the premises might forthwith be built accordingly.

Thus by clearing and building in "*Sections*" *simultaneously* at different parts of a locality, when one section was covered with buildings, apparently most suitable for the existing neighbouring occupants, they could be easily let and occupied *by* those occupants, and so the sections could go on "*shift and shift.*" In dealing with the Clearance and Rebuilding *in Sections*, the section should always take in the buildings on *both* sides of the road—so that the premises might be occupied, and all the appurtenances of Subway, Road, &c., be completed, and the traffic set going as fast as the sections were finished. The large clearance contemplated in my scheme would also afford the very important opportunity of constructing a long line of *new* thoroughfares at the side, perhaps, of a correspondingly long *old* thoroughfare, and thus still better facilities would be offered for the immediate letting of the new sites at the warranted increased rentals, and to the old tenants. I feel confident that, by careful selection of the spots to *first* deal with; by pushing on *simultaneouslv*, with the greatest vigour, at more than one part of the area taken in hand, the Improvements could be carried out, without any of those insurmountable difficulties which, many persons urge, must accompany an attempt to Improve London.

Mr. Westgarth has exhaustively dealt with this important question of *Disturbance*, and he has supplied some

valuable statistics and information on the system adopted by Baron Haussman in the reconstruction of Paris. There the City bought-out the Tenants; pulled down the houses; laid out the new thoroughfares; made the roads, &c.; and then sold the Freehold of the ground for building, by Tender. The *reconstruction* was not carried out by the City, and the present debt of about £60,000,000 represents, principally, the difference between the price at which the ground was sold, and the sum paid for its purchase, and for compensation, levelling and road making; excepting the portions of the loans expended in Municipal buildings, Theatres, Hospitals, Churches, &c., besides the new Hotel de Ville. In fine, by reason of the improved thoroughfares, rents have risen enormously in the neighbourhoods in which they have been made, the City, having sold the Freehold, has not benefited from the increased value, and the "unearned increment," as it is erroneously called, has gone into the pockets of the landlords.

It would not be wise to disregard the importance of this debt of £60,000,000 incurred by the Reconstruction of Paris. Unless the authorities there were wasteful, and the works and compensations were not carried on fairly and honestly, I see no reason to anticipate anything but a similar loss in the Reconstruction of Central London, supposing, of course, that a similar method is adopted to carry it out, which, however, I do not for a moment suggest, but on the contrary, put forward the following propositions:—

1. It would be absolutely necessary, whoever found the money, to bring the aid of Parliament to bear on the clearance.

2. An Act should be passed, empowering the construction of the works which would be shown on Deposited Plans.

3. "The Lands Clauses Consolidation Act, 1845," with any necessary emendations, should be the foundation of the proceedings for Clearance and Compensation.

4. "The Company," by whose agency the proposed Reconstruction would be carried out, should not only effect the clearance, and form the roads, &c., but should itself Build upon the sites such general structures, as the wants of the particular locality appeared to demand.

5. Sites, however, for Banks, Insurance Offices, and other large commercial buildings, should be let on Building lease, as applied for.

6. Leases of the buildings erected by the Company should be granted for terms not exceeding thirty years.

7. Leases of the buildings to be erected by the Banks, Insurance Offices, and other Building Owners, should be granted for terms not exceeding eighty years.

8. The Rents of the thirty years' leases would be Rack rents, but kept down to the lowest remunerative figures, to ensure occupation immediately after the premises were built by the Company. Rather than that premises should remain unoccupied for any length of time, they should be let at rents which would only a little more than recoup outlay, but, in the latter case, the Term should not exceed *seven years.* By this method the locality could be filled up, the natural increase of value would follow—the reversion would be only distant seven years, and then the larger rents could be easily obtained from tenants whose seven years' occupancy had almost fixed them to the locality, or from others attracted by the character of the neighbourhood.

I have known building speculations to become a dead loss to the builders, because of the determination to fix the maximum rents at once. Occupiers are often very diffident in taking new houses on undeveloped estates, at such maximum rents, whereas a low rent, *for a short term*, would tempt them to occupy, and the maximum rent could easily be obtained on a filled-up locality.

9. The rents of the eighty years' leases would be Ground Rents fixed with due regard to full recoupment of outlay on the Clearance, &c., and to the certain increased value of the ground by reason of a filled up and improved locality. The buildings would be erected from designs to be approved by the Company's Architect, and sufficient Caution money would be deposited with the Company to ensure the proper carrying out of the terms of the Building Agreement.

10. To carry out the undertaking a Department of Works would be created by the Company, consisting of Representatives of the various Financial Interests, and of a sufficient staff of Solicitors, Architects, Engineers and Surveyors. I should recommend that the Scheme be carried out in Separate Sections, as the Company may determine, and by *Competition* amongst substantial Contractors.

I thus leave the Essay for the consideration of the Committee, and will only add that many of the suggestions in it, and on the Drawings, have their foundation in Mr. William Westgarth's Paper read before The Society of Arts on February 6th, 1884.

WESTGARTH PRIZE ESSAY.

SUBJECT:

STREET RE-ALIGNMENT AND RE-CONSTRUCTION OF CENTRAL LONDON.

BY

HENRY HEWITT BRIDGMAN, F.R.I.B.A.,

ARCHITECT AND SURVEYOR.

SUBMITTED UNDER MOTTO

"CRESCAT ET PROSPERET LONDINIUM."

1884.

CONTENTS.

	PAGE
Preface	155
Introduction	157
Lt.-Colonel Haywood's Opinion in 1866 (Engineer to the Commissioners of Sewers for the City of London)	160
Population of the Metropolis	162
Distribution of Population	164
City Day Population	166
Traffic.—Vehicular	169
„ Class of Vehicles	172
„ Pedestrian	„
„ Railway Station	174
„ Width of Streets	175
Traffic over Bridges—London Bridge	177
Blackfriars Bridge	179
Southwark Bridge	180
„ Principal Lines of	183
„ North and South	„
„ East and West	184
Centres of Traffic	185
Commercial Centre	187
Legal Centre	„
Pleasure Centre	„
Markets Centre	„
Modern Improvements (coloured Green on Key plan)	188
Future Requirements („ Pink „ „)	191
Suggested New Streets—East of Farringdon Road	192
„ „ West of Farringdon Road	205
„ „ South Side of Thames	210
Suggested Southern Embankment	212
The proposed New Bridge at the Tower	213
The kind of Bridge required	219

PAGE
Cost of City Bridges 221
Cost of Suggested Improvements 221
Subway Crossings. 231
Telegraph Subways 232
Thames Navigation . . . . . ,,
Gates and Bars 233
Warehousing . . . . . ,,
Sanitation 234
Subsoil . . . . . ,,
New Sewers and Drainage 235
Sewer Ventilation . . . . . ,,
Levels and Gradients 236
Conclusion . . . . . ,,

ILLUSTRATIONS.

Key Plan of Suggested New Streets and Improvements . .
Plan of Proposed Subways at the Mansion House and Bank Intersection . . . . . .

WESTGARTH PRIZE ESSAY.

(One hundred pounds.)

SUBJECT:

STREET RE-ALIGNMENT AND THE RE-CONSTRUCTION OF CENTRAL LONDON.

PREFACE.

THE Author has much pleasure in submitting this Essay for the consideration of the Council of the Society of Arts, at whose disposal Mr. WESTGARTH has placed his munificent offer.

The Author regrets that he has not had an opportunity of devoting a longer time than a fortnight to the preparation of the Essay, thereby further enhancing the pleasure which its preparation has already given him. He trusts that some lasting benefit will accrue to the Metropolis as a result of a Competition on so interesting a subject.

The Author has confined himself to the one question of "Street Re-Alignment and Re-Construction of Central

London" and its accessaries; it is inferred from the instructions that this would be permissible. The lateness of the period at which the Competition became known to him precluded the possibility of any further attempt.

The Author desires to acknowledge the great assistance he has derived from the "City Day-Census, 1881," also from Lt.-Colonel Haywood's "Report on the Traffic and Improvements in the Public Ways of the City of London, 1866," also from the "Metropolitan Board of Works Report for 1883," from which many of the Tables have been taken, the same are consequently all authoritative.

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STREET RE-ALIGNMENT AND THE RE-CONSTRUCTION OF CENTRAL LONDON.

INTRODUCTION.

THE Author's qualifications for writing upon so important a question as the "Street Re-alignment and Re-construction of Central London" are based upon the following facts :—

He is an architect and civil engineer by profession, and, before commencing practise, had for some time acted as a Surveyor to one of the largest metropolitan Vestries, containing a population of close upon a quarter of a million of inhabitants; so that in the discharge of the various duties devolving upon him, the questions of the formation and improvement, of streets, and the supervision of thoroughfares generally, took a prominent place. A considerable knowledge of the "Metropolis Local Management Acts," which

regulate all matters of street alignment and re-construction in the Metropolis, followed in consequence of that appointment.

He is also qualified by examination to act as District Surveyor within the Metropolitan area, is a Fellow of the Royal Institute of British Architects, and a member of the Society of Arts, and has practised his profession as an architect and surveyor for thirteen years. He is also co-author of the Corporation of Liverpool prize essay entitled a "Central Wholesale Fish Market for London," obtained in open competition, on the occasion of the International Fisheries Exhibition, in London in 1883.

The time at disposal for the preparation of this Essay has been very brief (the competition having only come to the author's notice late in November, although it had been open during the whole year), still his practical and intimate acquaintance with the subject being not inconsiderable, he desired to embrace the opportunity of giving his views upon the same.

He would also add that he is acquainted with most of the various recent street improvements in London and also with those now in contemplation, both by the Corporation of the City of London and the Metropolitan Board of Works. As far as they apply to this Essay, they are included in the maps herewith.

Having for some years witnessed the growing necessity of relief to many of the main lines of traffic in Central London, he has frequently and seriously considered how the present congested condition of the traffic could be improved.

The subject is one requiring to be treated in a broad and comprehensive manner. London labours under great disadvantages, the bands that now prevent its full development require relaxing in order that moving space may be

provided for the unprecedented aggregation of so large a number of inhabitants, and facilities given for transacting the extraordinary magnitude of the business inseparable from the metropolis of so vast and increasing an empire.

The Author's ideas on the subject are illustrated in the annexed maps; a key plan gives the general scope of them. Detail maps of several parts of Central London, most in need of improved street accommodation, accompany it. He would also add that the suggested lines of streets shown are not simply drawn haphazard, but, after a careful study of the various routes, and it may be stated, in most instances, from a personal knowledge of the district which each map covers. The lines are set out in a practical manner, having regard to the numerous prominent buildings *en route* and the many important circumstances in connection therewith.

The maps are six in number, and three illustrations consisting of the following:—

* 1. Key plan. The central sheets of Bacon's Map of London. This district extends from the "Angel" Hotel at Islington to the "Elephant and Castle," Newington, and from Piccadilly Circus to Whitechapel High Street, a distance of about three miles each way and comprising nine square miles.

2. Sheet XXXV. Ordnance Survey of London, scale 25-344 inches to a mile, and part of Sheet XXXIV. attached, extending from Poultry to Regent Street.

3. Sheet XXXVI. Do., Do., extending from Poultry to Whitechapel.

4. Sheet XLV. Do., Do., extending from Borough High Street, Eastwards, South side of Thames.

5. Sheet XLIV. Do., Do., extending from Borough High Street to Westminster.

* This only is published.

6. Sheet XXVI. Do., Do., extending from King's Cross to City Road Basin.

*7. Plan of Proposed Subways at the Mansion House and Bank, Intersection.

*8. A suggested design for a Combination High and Low Level Bridge at the Tower.

LT.-COLONEL HAYWOOD'S OPINION IN 1866.

About nineteen years ago, (viz., in March, 1866), Colonel Haywood, C.E., the Engineer to the Commissioners of Sewers for the City of London, submitted to that body a report entitled: "Traffic and Improvements in the Public Ways of the City of London." The conclusions then arrived at and set out in his report are interesting and worthy of careful perusal. The following are extracted therefrom.

"The metropolitan population is now about three millions, and in forty years will, in all probability, be six millions."

"The traffic of the City has for several years been increasing in a greater ratio than the increase of the metropolitan population."

"In 1848 a traffic equal to *one-seventh* of the whole metropolitan population entered the City during the time of the business hours of the day."

"In 1860 a traffic equal to nearly *one-fifth* of the whole metropolitan population entered the City during twelve of the business hours of the day and a traffic of *one-fourth* of the whole metropolitan population during the 24 hours, viz., 706,621."

"The traffic now entering the City daily is about *three-quarters of a million*, and in forty years hence will probably be a *million and a half*."

"This daily business population needs now, and hereafter

* These only are published.

will need still more, improved means of transit, and these should be provided."

"*Within the City itself there is hardly a leading thoroughfare which is equal to the traffic that passes through it*, and many subsidiary streets are inconveniently crowded with their own traffic."

"The only remedies for this state of the City thoroughfare are the formation of new thoroughfares and the widening of those now existing."

"The first great difficulty is the incapacity of London Bridge with its approaches on both sides, and this can only be remedied by the construction of a new Bridge with good approaches to the east of London Bridge."

"The second great difficulty is the *incapacity of the main thoroughfares running east and west near to the Bank*, and this can only be remedied by the formation of a new thoroughfare running through the City north of, and contiguous to, the Bank."

"General improvement is needed in many of the City thoroughfares, plans of such Streets should be prepared with lines of improvement shown, and to these lines all premises should be set back when opportunities present themselves."

"Looking to the future as well as to the present necessities, and having regard to the fact that the cost of present improvements will probably be in a degree cast upon a future generation, they should be planned and carried out upon the broadest and most comprehensive scale, and no obstacle should be allowed to interfere with this principle, such a course is true economy."

"More stringent police regulations with regard to the traffic are needful."

"The provision of the necessary funds is one of the greatest difficulties and to some will appear an invincible

one; but it should be held in mind that where the need of public improvement arises from the increase in the numbers, business and wealth of the population it may be generally inferred that the population is able to pay for them."

POPULATION OF THE METROPOLIS.

The foregoing constitutes a summary of the conclusions of an able report by the Engineer and Surveyor to the Commissioners of Sewers, whose forty years' experience as a valued public officer of the Commissioners would fully entitle him to speak with authority on this important subject.

It is not difficult to prove the soundness of the views thus enunciated and to show how nearly in many instances the anticipations and observations so long foreshadowed have been realized.

It will be the Author's desire, in the first place, to show the necessity of vastly improved means of communication in and about Central London, and, in the second place, to point out how that need can be met.

Colonel Haywood's Report refers more particularly, of course, to the City, but in degree it applies to the whole of Central London, which might reasonably be reckoned to extend from Tottenham Court Road and Regent Street in the west, to the Tower and Whitechapel High Street in the east, and from the "Angel" at Islington in the north, to the "Elephant and Castle" in the south—for whilst the congestion of the traffic is greater, by far, in the very heart of the City than elsewhere, still the inconvenience is felt only in a less degree in proportion to the distance from the centre where the traffic ebbs and flows to and from all parts of the Metropolis.

The following table shows the rate of increase in the population of the Metropolis and the City during the past

nine years. The population of the City proper, however, has gradually decreased during that period :—

Pop. of the Metropolis in	1801	958,863	of the City	128,833
"	1811	1,138,815	"	121,124
"	1821	1,378,947	"	125,065
"	1831	1,654,994	"	123,608
"	1841	1,948,417	"	124,717
"	1851	2,362,236	"	129,128
"	1861	2,804,079	"	113,387
"	1871	3,020,871	"	74,897
"	1881	3,452,350	"	50,526

If *three quarters of a million* of people entered the City early in 1861 the number would be more than one-half of the entire male population, as will be seen from the following figures.

In 1861 the population of the Metropolis was composed of—

1,307,781 males.
1,496,298 females.

2,804,079 Total.

of the males 846,754 were above fifteen years of age.
461,027 were under " "

1,307,781 Total number of males of all ages.

From 1801 to 1861 the population of the Metropolis had about trebled itself. It has nearly doubled itself during the past forty years, that being about the present ratio of increase. In 1841 the population was 1,948,417. In 1881 it was about 3,452,350. By 1901 it may be fairly reckoned that the population of London will be from 5½ to 6 million souls, probably the larger number, and possibly that number might be exceeded, as the influx from the agricultural

districts to the manufacturing centres, and again from all the great centres to the Metropolis increases yearly, and this increase will, in all probability, be still larger in the future than in the past. The education of the people and the enfranchisement contemplated of such large numbers will certainly tend in this direction.

DISTRIBUTION OF POPULATION.

It is in anticipation of the growing population in the future, therefore, that provision has to be made, and it is not difficult, when all the surroundings are considered, to foresee where improvements in our streets will be most needed and how that can be best made. A broad and comprehensive view, however, must be taken of the whole subject, for whilst the Metropolis is developing by such rapid strides, proportionately increasing numbers of persons, engaged in actual business and moving to and fro, will spend the larger portion of every day within the comparatively limited area of the centre of the Metropolis, but principally within the City itself. Regard must be paid, moreover, to the populations of the various districts, and the directions which the streams of the larger part of the moving population may be expected to take, before a commencement is made to effect a remedy for the present deficiencies. On reference to the following table it will be seen from which district the greatest influxes come and the directions the great streams of traffic at present take.

This table shows the area, as well as the population, also the present number of persons to a square mile in the various Metropolitan Districts and their capacity for further increase.

Name of Parish or District.	Superficial Area in Acres.	1851.		1881.	
		Total Population.	No. of Persons to Square Mile.	Total Population.	No. of Persons to Square Mile.
Limehouse	153	44,406	185,751	58,500	244,720
Strand	174	44,460	163,531	32,563	119,772
St. Luke	220	54,055	157,251	46,847	136,282
Holborn	196	46,621	152,232	36,122	117,949
St. James, Westminster	164	36,406	142,072	29,865	116,546
St. Giles	245	54,214	141,620	45,257	118,221
Fulham	136	28,790	135,482	114,811	540,207
St. George-in-the-East	243	48,376	127,410	47,011	123,815
Whitechapel	406	79,759	125,728	71,301	114,000
St. George, Southwark	282	51,824	117,615	68,652	134,500
Clerkenwell	380	64,778	109,100	69,019	135,200
Shoreditch	646	109,257	108,242	126,565	127,700
St. Saviour, Southwark	250	35,731	91,471	28,628	71,600
London City	434	55,932	82,480	50,526	75,700
Bethnal Green	760	90,193	75,952	127,006	101,000
St. Olave, Southwark	169	19,375	73,373	11,947	44,800
Marylebone	1,509	157,696	66,882	155,004	66,500
Newington	624	64,816	66,478	107,831	110,720
Mile End Old Town and Stepney	1,257	110,775	56,401	105,573	53,750
St. Martin-in-the-Fields	305	24,640	51,704	17,447	34,800
Westminster (Board of Trade)	917	65,609	45,790	59,837	41,760
Bermondsey	688	48,128	44,770	86,602	80,640
Chelsea	865	56,538	41,832	88,100	65,200
St. George, Hanover Square	1,161	73,230	40,368	89,517	49,360
Pancras	2,716	166,956	39,342	236,209	55,600
Lambeth	4,015	139,325	22,209	253,569	40,200
Islington	3,127	95,329	19,511	282,628	56,600
Rotherhithe	886	17,805	12,861	36,010	26,011
Greenwich	5,367	99,365	11,849	131,264	15,680
Kensington	7,374	120,004	10,415	162,924	14,120
Poplar	2,918	47,162	10,344	156,525	34,320
Hackney	3,929	58,429	9,518	186,400	36,000
Camberwell	4,342	54,667	8,058	186,555	27,000
Hampstead	2,252	11,986	3,406	45,436	12,900
Wandsworth	11,695	50,764	2,778	210,397	11,480
Lewisham	17,224	34,835	1,294	135,366	5,930
Woolwich	1,596	32,367	12,977	36,600	14,670
Paddington	1,280	46,345	23,173	106,098	53,180

The new outlying Districts, as they become built over, under improved sanitary and building regulations, will be of less density than the old. Sir Joseph Bazalgette, C.B., and Colonel Haywood, when investigating this question, in so far as it affected the interception of the sewage from the Thames, assumed that the future density of the population

of the uncovered area of the suburbs of the Metropolis would be about 30,000 persons per square mile.

The rate of increase in many Districts is remarkable, the rate of density, however, has not increased in the same proportion, some Districts having considerably more area than others. It will be seen that the density ranges from 5,930 per square mile in Lewisham, to 540,207 per square mile in Fulham.

The following list of Metropolitan Boroughs in their order of population will indicate the District from which the largest numbers of the masses emanate—

Parliamentary Boroughs of the Metropolis.	Population in 1881.	Order as regards Population.
Borough of Finsbury, N. . .	524,480	1
" Lambeth, S. . .	498,967	2
" Marylebone, N. .	498,311	3
" Tower Hamlets, E. .	438,910	4
" Hackney, N. . .	417,191	5
" Chelsea, W. . .	366,516	6
" Westminster, S.W. .	228,932	7
" Southwark, S. . .	221,866	8
" Greenwich, E. . .	206,651	9

From these figures it will be seen that the greatest traffic Citywards is from the purely Northern and Southern Districts. Close upon *a million and a half* inhabit the Northern Districts, and *above a million* the Southern, whilst considerably above *one million* inhabit the purely Eastern and Western Districts.

City Day Population.

It would be very interesting, were it possible, to watch the multitude pouring into the City during the day. The early morning begins with an influx of people from all

directions towards the centre of London. First the market frequenters, buyers, sellers, and distributers, and the working classes arriving by foot or by train, so that from 5 to 7, 35,895 persons enter within the borders of the City. From 7 to 10 an army of 229,611 strong is passing into the City, consisting of commercial men, bankers', and law employés, clerks, messengers, porters, and office lads. During the third period, from 10 to 12 o'clock, 107,325 persons more, chiefly principals and managers, have arrived all to take up their fixed daily occupations within the City, and to return again to their residence in the various suburbs at night. The figures tabulated are as follows:—

Number of persons entering the City daily from 5 a.m. to 7 a.m.	35,895
Number of persons entering the City daily from 7 a.m. to 10 a.m.	229,611
Number of persons entering the City daily from 10 a.m. to 12 noon	107,328
Number of persons entering and engaged in and about the City daily	372,835
Number of persons as Clients, Customers, &c., entering the City daily for short periods	366,805
Total	739,640
Other persons, on the average, who enter and leave, or pass through the City daily .	57,923
Total travelling to and leaving the City daily, exclusive of actual residents . .	797,563
Number of actual residents within the City .	50,526
Total	848,089

Included in the first total are those only who are fre-

quenters to the City as business men, customers, clients, and others having business within the City, but not including those who are actual residents. There is in all considerably more than *three quarters of a million* in and about the City during the sixteen active hours of the day, for, beyond the first total, in the remaining eight hours a further 57,923 visitors and others enter and leave the City during the day, making together 797,563. This number it is perceived, however, is not the grand total. Over and above the figures already given there were in 1881 within the City as *actual residents* 50,526 (compared with 74,897 in 1871 and 113,387 in 1861), *thus giving a grand total for* 1881 *of occupiers, traders and residents who visit and are in and about the City daily of** 848,089.

Commencing with a flow of 15,000 per hour, as the day wears on that number increases in volume to 20,000, 35,000 up to 93,000, until it culminates at 111,111 per hour. This tide of humanity then recedes until between 8 and 9 o'clock p.m., when the great bulk of the City's population has retired and the hour of quiet and rest has arrived.

The mercantile day population has gradually increased from 170,133 persons in 1866 to 261,061 persons in 1881, an increase of 90,947, or at the rate of 53·4 per cent. This shows an increase over the number that entered the City daily in 1866 of 59,896, and 82,261 daily over that of 1860. But for the heavy tax on inhabited houses in the City of 9d. in the £, no doubt a very much larger population would be residents. As the law stands at present the whole of a building is liable for house duty if only a single resident occupies the premises beyond a housekeeper or caretaker.

* In 1848 the numbers were from 8 a.m. to 5 p.m.				. . . 315,099
In 1860 the numbers were during 24 hours				 706,621
In 1866	"	"	"	 728,986
In 1881	"	"	"	 848,089

To reside in the City, therefore, would be an enormous tax upon highly-rated City property without a corresponding benefit. The number of inhabited houses is consequently only returned at 6,493 in the Imperial Census, but the 'City Day Census' gives the number as 24,898. This occurs from the fact that in the former the resident caretakers and a comparatively small number of other residents only are reckoned. As an instance to show how fallacious this mode of reckoning is, a certain block of offices, according to the Imperial Night Census, contained 4 persons only, but according to the 'City Day Census' there were actually engaged within the same building 250 traders, 275 clerks and other employés, in all 527 persons, the building, no doubt, being divided into several distinct and separate premises, according to the requirements of the Building Act, but this is entirely ignored in the Imperial Census.

TRAFFIC.

It is now proposed to give some statistics of the vehicular and pedestrian traffic in various streets within the Clty, and to show the rate of increase of the same.

VEHICULAR TRAFFIC.

Within the City there is hardly a leading thoroughfare which is equal to the traffic passing through it. The great impediment in the streets is the enormous vehicular traffic, and special consideration must consequently be given to that most important branch of the subject. That fact will be better exemplified by demonstrating the large increase of traffic which has taken place in the thoroughfares of the City—despite the relief which has been frequently given by the construction of numerous new lines of streets and railways—Subjoined, therefore, is a Table showing the

traffic at several important points within the City at periods fifteen years and sixteen years apart respectively :—

Comparative TABLE showing the increase in the number of vehicles passing both ways at certain points in various streets within the City of London, between the hours of 8 a.m. and 8 p.m., during the years 1850, 1865, and 1881.

Situation.	Width of Carriage-way at point of observation.		Total in 12 hours.		Increase since 1850 per cent.	Total in 16 hours.
			In 1850.	In 1865.		In 1881.
	ft.	in.				
Aldgate High Street .	57	6	4,754	8,376	76·18	11,240
Aldersgate Street by Fann Street	30	8	2,590	3,936	51·96	4,618
Bishopsgate Street Without	22	2	4,110	7,366	79·22	7,542
Blackfriars Bridge . .	28	0	5,262	9,660	83·58	13,630
Finsbury Pavement by South Place . .	41	7	4,460	6,715	50·56	6,856
Fleet Street by Temple Bar	23	8	7,741	11,972	54·65	8,920
Holborn Hill by St. Andrew's Church . .	35	3	6,906	9,134	32·26	13,372
London Bridge . .	35	0	13,099	19,405	48·14*	19,738
Southwark Bridge . .			—	—	—	3,468
			48,922	76,564	56·50	89,384

TABLE showing the Vehicular Traffic between 8 a.m. and 8 p.m. on the working days in the months of March and April, 1873, during which observations were taken at certain points in the following streets :—

Name of Street.	8 a.m. to 8 p.m.	Per week of 6 days.
Cheapside, east of Milk Street . .	10,847	56,523
Poultry, by Grocers' Hall Court .	9,224	49,010
King William Street by Abchurch Lane	7,800	38,233
Cannon Street by Bush Lane . .	5,440	28,234
King William Street, north of Arthur Street	16,781	93,081
„ by Gracechurch Street	13,239	76,349

The vehicular traffic increased 54 per cent. at Temple Bar from 1855 to 1865. At Holborn Bars it increased 32 per cent., and at Aldgate 76 per cent.

The traffic of Cannon Street increased from 5,200 vehicles in 1863 to 6,000 in 1865.

There is about one person travelling in vehicles to every 3·13 on foot, and whilst every provision must be made for so large a proportion of pedestrians by sufficiently wide footways, yet the vehicular traffic must always have the first consideration for space, as the accommodation is limited between the kerbs; the pedestrian traffic can accommodate itself more easily. The foot traffic, however, is far more vast numerically than the vehicular, but it is the latter which is the cause of the stoppages and delays. One great advantage, therefore, would result if many of the existing footways could be widened, to accommodate the pedestrian traffic, which is always greatest in the centre-most streets in the City, particularly those leading to the Bank centre, but the footways of the narrow city streets and those chiefly used cannot be widened so long as the vehicular traffic is so great. The Bank Centre seems to be the goal whither all pedestrians in the City are tending. By the formation of new streets, thus avoiding the Bank Centre by diverting some of the vehicular traffic, many of the city footways could be widened to their proper requirements.

The City day Census of 1881 gives 66,909 vehicles entering the City during the 16 working hours of the day, and 4,984 during the remaining 8 hours, or a total of 71,893 in 24 hours.—(See details following.)

CLASS OF VEHICLES.

TABLE showing the Number and Class of Vehicles entering the City during 24 hours, in one direction only, in April, 1881.

In 16 hours (day)	66,909
In 8 hours (night)	4,984
Total in 24 hours . .	71,893

This number was made up as follows:—

Cabs	15,966
Omnibuses	6,176
Other 4-wheeled Vehicles . .	29,396
Other 2 " " . .	20,355
Total	71,893

The heaviest class of vehicles is largely in the majority in and about the City; their speed is very slow. It would be a great gain if all such traffic could be, in a measure, confined to certain streets. Cheapside and Poultry should be free from all such heavy traffic; indeed, the traffic generally should be so controlled that only the lighter class of vehicles, with few exceptions, should pass the Mansion House; at present, however, this is impossible. No part of such a scheme as that now under consideration could be carried out, without materially assisting the object in view by contributing to localize the different kinds of traffic.

PEDESTRIAN TRAFFIC.

The following numbers of persons traversed some of the principal lines of traffic *en route* to the City of London in 1881 in *one direction only* during sixteen hours of the day; the numbers going both ways would necessarily be about double the figures given:—

No.	Inlets.	In 16 hours.	In 24 hours.
1.	London Bridge . .	72,131	78,943
2.	Blackfriars Bridge .	39,585	43,567
3.	Southwark Bridge. .	14,398	15,045
4.	Aldgate . . .	46,284	49,405
5.	Bishopsgate Street .	31,618	34,236
6.	Eldon Street, Finsbury .	13,656	15,374
7.	Finsbury Pavement .	26,598	28,616
8.	Beech Street . .	17,153	18,223
9.	Aldersgate Street . .	33,737	36,821
10.	St. John Street . .	20,210	21,665
11.	Farringdon Street. .	23,922	26,705
12.	Hatton Garden . .	12,804	13,419
13.	Holborn Bars . .	50,322	55,222
14.	Chancery Lane . .	12,116	12,758
15.	Temple Bar. . .	38,998	45,918

TABLE showing the Foot Traffic entering the City at its eight principal inlets in May, 1860, and 1881, going one way only.

No.	Situation.	Total Number of Persons.		
		1860.		1881.
		In 12 hours. 7 a.m. to 7 p.m.	In 24 hours. 7 a.m. to 7 a.m.	In 24 hours. 7 a.m. to 7 a.m.
1.	Aldgate High Street .	29,160	42,574	49,405
2.	Aldersgate Street . .	15,640	21,060	36,821
3.	Bishopsgate Street Without	23,500	34,160	34,236
4.	Blackfriars Bridge . .	24,199	31,642	43,567
5.	Finsbury Pavement . .	21,150	27,024	28,616
6.	Fleet Street by Temple Bar	25,050	36,950	45,913
7.	Holborn	29,770	41,610	55,222
8.	London Bridge . .	41,949	54,128	78,943
	Totals . .	210,418	289,148	372,723

About 54 per cent. of the daily foot traffic entering the City, at the time these observations were taken was through these eight inlets.

The movement and extent of the pedestrian traffic at certain points within the City is shown by the numbers crossing at the following centres in 1863 and in 1881 respectively. One is agreeably surprised to find there are so few accidents consequent upon such an enormous extent of traffic; but this is accounted for by the excellent police arrangements.

	1863. 8 a.m. to 5 p.m.	1863. 24 hours (estimated).	1881. 8 a.m. to 5 p.m. (estimated).	1881. 24 hours (estimated).
At the Mansion House and Bank intersection there crossed over	56,235	84,352	72,542	108,814*
,, London Bridge by King William Statue . .	42,395	63,592	55,690	82,033
,, Ludgate Hill intersection .	37,075	55,612	47,826	71,739
,, Cornhill by Leadenhall St. and Gracechurch Street .	28,080	42,080	37,224	54,284
Total number at these four principal Centres . . .	163,785	245,636	213,282	316,870

Railway Station Traffic.

The following is a list of stations, &c., with the numbers of passengers that emerged from them into the City in one day in April, 1881 :—

* This is equal to 34,058,782 during the year, Sundays excluded. The number of vehicles estimated to pass the same spot during the year is 17,211,557.

	Foot Passengers.
1. Mansion House—District Railway . .	13,528
2. Cannon Street—South-Eastern Railway .	20,471
3. Fenchurch Street—London and Blackwall Railway	15,242
4. Liverpool Street—Great Eastern Railway .	32,324
5. Broad Street—North London Railway .	29,506
6. Bishopsgate Street—Metropolitan Railway	8,292
7. Moorgate Street " "	12,634
8. Aldersgate Street " "	8,812
9. Holborn Viaduct—London, Chatham, and Dover Railway	2,777
10. Snow Hill— " " "	2,532
11. Blackfriars—District Railway . . .	3,541
12. Ludgate Hill—London, Chatham, and Dover Railway	18,390
13. All Hallows Pier.	5,500
Total	173,549

In 1866 the City Railway Stations emitted daily between 60,000 and 70,000 passengers, whilst at present that number is more than doubled. To show the extent of the general increase of traffic it will suffice to say that the London General Omnibus Company carried 1,357,654 more passengers in 1865 than in 1864. The increase of late years has been far greater.

WIDTH OF STREETS.

The widths of the streets given in a previous list (page 170) are those of the most spacious within the City boundary, the larger number of the streets, however, are much narrower, and although they have not so much work to do, they are nevertheless, for the most part, crowded during the greater part of the day. The following is a list of some of the

principal streets next in importance, and the number of vehicles which passed through them between 8 a.m. and 8 p.m. on the days named during the years 1865 and 1866:—

Situation.	Width of Carriage-way at Point of Observation.		Total in 12 Hours.	Date of Observation.
	ft.	in.		
Billiter Street . . .	15	11	1,547	October, 1865.
Barbican	24	3	4,461	February, 1866.
Chancery Lane . . .	21	0	2,965	February, 1866.
Crutched Friars . . .	18	8	1,920	February, 1866.
Fore Street . . .	22	3	2,924	February, 1866.
Giltspur Street . . .	32	9	2,340	February, 1866.
Gresham Street . . .	29	10	4,506	October, 1865.
Houndsditch . . .	24	4	3,632	July, 1865.
Lower Thames Street .	17	5	1,460	October, 1865.
Minories	30	7	3,461	February, 1866.
Old Bailey	21	10	2,411	November, 1865.
Princes Street . . .	23	7	6,800	March, 1866.
Queen Street, north end .	15	1	3,471	November, 1865.
Threadneedle Street . .	13	10	3,743	June, 1865.
Upper Thames Street . .	23	6	2,781	November, 1865.

The traffic of course varies very considerably, from day to day, being very much more on certain days than on others, but the work which these narrow streets of the City have to accomplish compares favourably with that of many of the most important thoroughfares in the Metropolis, as shown by the subjoined list. The time, 12 hours, being the same as before:—

Situation.	Date.	Width of Carriage-way at Point of Observation.		Total No. of Vehicles.
		ft.	in.	
Regent Street, south of Princes Street	July, 1865	52	1	11,343
Westminster Bridge	,, ,,	56	8	11,609
Oxford Street, east of Duke Street .	,, ,,	51	9	8,597
Oxford Street, west of Well Street .	Nov., 1864	44	10	10,619
Piccadilly, west of Half Moon Street .	July, 1865	50	8	8,220

Gresham Street is used by just *one-half* as many vehicles as pass along Piccadilly or Oxford Street, whilst more than *two-thirds* as many vehicles pass every day along Princes

Street as use either of those streets, and *four-sevenths* as many as pass along either Regent Street or over Westminster Bridge. Piccadilly, Oxford Street, and Westminster Bridge are certainly amongst, if not the, busiest thoroughfares outside of the City.

TRAFFIC OVER THE BRIDGES.

The following Table gives the extent of the vehicular and pedestrian traffic over the City bridges, *i.e.*, so far as the figures can be traced since 1823. It will serve to show the extraordinary increase in regard to both at the different periods.

Name.	1823 (8 a.m. to 8 p.m.).		1850 (8 a.m. to 8 p.m.).		1860 (8 a.m. to 8 p.m.).	
	Vehicles.	Pedestrians.	Vehicles.	Pedestrians.	Vehicles.	Pedestrians.
London Bridge	6,182 (Old London Bridge)	89,640	13,000	—	16,000 (Increase 23 per cent. in 10 years)	—
Blackfriars ,,	4,047	61,069	5,200	—	6,800 (Increase 31 per cent. in 10 years)	—
Southwark ,,	*	*	*	—	1,000	1,400
Totals	10,229	150,709	18,200	—	23,800	—

Name.	1863 (24 Hours).		1865—July (16 Hours).		1881—April (24 Hours).	
	Vehicles.	Pedestrians.	Vehicles.	Pedestrians.	Vehicles.	Pedestrians.
London Bridge	25,963	—	†19,400	—	21,466	157,886
Blackfriars ,,	10,654	—	10,700 (November, 1865)	—	14,584	87,134
Southwark ,,	1,094	—	4,700 (November, 1865, 8 a.m. to 8 p.m.)	12,300	3,560	30,090
Totals	37,711	—	34,800	—	39,610	275,110

* Until Southwark Bridge was freed by the Corporation little or no use was made of it.

† 16 hours only. New Blackfriars Bridge, opened by the City in 1869, has resulted in a material relief to London Bridge.

little doubt that ten years hence the vehicular traffic over this Bridge will be equal to that passing over London Bridge.

SOUTHWARK BRIDGE.—The vehicular traffic over Southwark Bridge during one day in November, 1865, from 8 to 8, after removal of the toll, was 4,700, compared with 1,094 in 1863. This was a very large increase on the traffic that passed over this bridge before it was freed. The larger part of this traffic, estimated at 3,700, was taken from London Bridge. The increase is as follows:—

In 1850	(practically *nil*)	vehicles.
„ 1863	1,094	„
„ 1865	4,700	„
„ 1881	3,560	„

It will be seen how greatly London Bridge has been relieved by Southwark Bridge since it was opened free of toll in 1865 at a cost to the Corporation of £218,868. All of these bridges have been in some measure relieved since the Embankment was opened, many vehicles formerly passing from Westminster, &c., through Lambeth and Southwark, and across the Bridges, to get to the City, now go by way of the Embankment.

When the new Southwark Street was constructed it was thought that a considerable share of the traffic of London Bridge from that side would be relieved by Southwark and Blackfriars Bridges; that expectation has been fully realised. It is true Blackfriars Bridge has the larger proportion, and it is increasing daily; but it chiefly consists of the traffic going west or north-west. Vehicles with goods for the east have still to incur the delay of crossing London Bridge. As to Southwark Bridge, the gradients on both north and south sides are too steep—1 in 18 and 1 in 24 respectively—so that in its present state it can never render that extent of assistance to London Bridge which is desired,

it being almost impossible for heavy traffic to ascend it. To improve the gradients would certainly involve a very large expenditure. On the north side, which is the steepest, a Viaduct across Thames Street would be preferable, a suggestion which is certainly worthy of serious consideration, and if carried out would doubtless justify the outlay.* The distance is considerable between London Bridge and Blackfriars, and the extent of traffic every day towards the City is surprising, and the only way to relieve any particular bridge is to provide ample means of approach to other points. Certain main streets, Southwark Street in particular, were actually made to divert the traffic from one bridge to the other. Street improvements are much needed on the south side, and could be effected to favour any particular bridge at no very considerable cost. Upon the facilities of reaching any particular bridge will usually depend the bridge that is used for crossing the River.

The advantage of being able to get into and across the City and, also, northwards from the south or south east, say, for instance, from the direction of Great Dover Street, without having to pass either London Bridge or Blackfriars —the only choice being now between these two at present —would certainly be very great, and it will be readily seen with what facility this could be effected by means of the connecting street No. 21[a], if Southwark Bridge were made more useful. With such an improved approach to this bridge, as by a viaduct, in conjunction with the new lines of streets on the north and south sides as suggested, the present want would be met, without on the one hand having to pass the Mansion House, or on the other to cross over any street where the traffic of the same would be likely to cause any delay or inconvenience.

* The steepness of Southwark Bridge causes most of the heavy traffic to cross by way of Blackfriars Bridge, thus necessitating delay.

In order to assist in diverting the traffic from London Bridge and to incline the same to Southwark and Blackfriars Bridges the proposal, on the south side of the river (as explained more fully hereafter) is to construct two short streets, one previously referred to, connecting the Borough with Southwark Bridge Road and Blackfriars Road respectively. Starting from a point opposite Great Dover Street, one would join Southwark Bridge Road at the Southwark Street intersection where the Railway passes over, and the other would continue the line of Gravel Lane and Great Suffolk Street, to Southwark Street near Blackfriars Station. These would, no doubt, greatly assist the traffic from the south and south-east districts going towards Southwark and Blackfriars Bridges, and so take a part of London Bridge traffic. Any reasonable and feasible project that would lessen the concentration of so many vehicles at London Bridge, in order to improve the pedestrian traffic there, should not be lost sight of. In the year 1850 13,000 vehicles passed over London bridge between 8 a.m. and 8 p.m. In 1860 16,000 vehicles passed over it daily, showing 23 per cent. increase; and in 1863, before Southwark Bridge was freed, and before the new Blackfriars Bridge was completed, it increased to 25,960. At the same rate of increase at the present time, but for the relief given, there would be now crossing over within the same time daily at least 34,000 vehicles; but since then Blackfriars Bridge has been opened, and, as we have seen, takes a considerable part of that traffic. Still Blackfriars Bridge has its own locality to supply, which is increasing yearly as the Northern and Southern districts grow and the inhabitants multiply. Since that time, too, Southwark Bridge has been purchased by the City and freed. Both these bridges therefore are now a great and growing relief to London Bridge; further accommodation, however, is still needed.

PRINCIPAL LINES OF TRAFFIC.

The larger part of the traffic may be said principally to move in two directions, viz. :—

1. *North and South.*
2. *East and West.*

NORTH AND SOUTH TRAFFIC.

The northern traffic is collected and approaches the City, or crosses to the south, by five main streams—viz., Shoreditch, *viâ* Bishopsgate Street; City Road *viâ* Moorgate Street, Aldersgate Street, St. John's Street Road *viâ* Giltspur Street, and Farringdon Road; a large part of which has to cross over the river to the south of London. To do that the two main East and West lines—viz., the Cheapside line and the Cannon Street line—have to be crossed, thus creating great delay and inconvenience and oftentimes much confusion and danger.

The southern traffic enters the City by the only three bridges available, viz., London Bridge, Southwark, and Blackfriars Bridges. As already pointed out, Southwark being so steep, only the lighter traffic can use it, thus it is almost entirely confined to the other two bridges, so that London Bridge—being immediately adjacent to the commercial centre, and being in a direct line with the great intercepting artery Shoreditch, with its several tributaries, and being also so convenient of approach from the Docks' and shipping interests eastwards—and the Railway traffic—comes in for, by far, the larger share of the work. The extent of the traffic therefore concentrated on London Bridge is prodigious, being collected in the Borough from Great Dover Street, Newington Causeway, Borough Road, Long Lane, Bermondsey, and Tooley Street, it becomes mingled at the bridge with an enormous traffic from the

other side, collected at the north approach from Cannon Street, King William Street, Gracechurch Street, Eastcheap, and Fish Street Hill from Thames Street. The approaches, therefore, on either side of the river, as well as the bridge itself, may be said to be in a chronic state of crush.

Blackfriars Bridge collects the traffic more westerly, and also that going in a north-westerly direction. The area from which it is collected is very large—viz., from Walworth, Kennington Road, Lambeth, and a great deal from the Westminster side of the river, from over Westminster and Lambeth Bridges, insomuch that this bridge has quite enough to do. Fortunately the approaches and streets immediately contiguous thereto are very spacious.

East and West Traffic.

The traffic passing East and West may be divided generally into two streams, and, until very recently, there was only one main stream from the East—viz., from Whitechapel *viâ* Leadenhall Street and Fenchurch Street; but Eastcheap has been recently reconstructed and continued to a higher level at its eastern end, so that much of the traffic unable previously to approach the east end of Great Tower Street will now be able by an easy gradient to pass along the entire length of the new street, collecting much of the eastern traffic in its course from the direction of the Royal Mint, East Smithfield, and Minories, which will no doubt materially assist the narrow neck at Aldgate, through which nearly the whole of the eastern traffic formerly had to pass.

The means of approach for the Western traffic are more numerous. There are three main lines of streets: Oxford Street and Holborn *viâ* Newgate Street; the Strand and

Fleet Street *viâ* Ludgate Hill, and the Thames Embankment *viâ* Queen Victoria Street. The larger part of the traffic, of the two former lines, converges at the west end of Cheapside, and proceeds along the same route to the Bank, and, although much of the traffic in Queen Victoria Street is diverted at the Mansion House Station and taken *viâ* Cannon Street towards London Bridge, still a large proportion of it passes the Bank, which will always be the very centre-point of London; but *there certainly is no need for all the streets to be made to concentrate at that point,* seeing the utter impossibility of enlarging the space there, to accommodate such an enormous collection of traffic.

It is unnecessary to dilate upon the vast area of the various districts which feed the main lines of streets running to the City. It is only necessary to consult a map of London to see the great number of streets intercepted by each of them; when Oxford Street and the Strand, Aldersgate Street, City Road, Shoreditch, Whitechapel, Borough Road, and Blackfriars Road, are all crowded, yet from all of them there is constantly being poured into the few City thoroughfares named nearly the whole of the traffic. Can one wonder, therefore, at the congested condition of these central streets, considering they are the recipients of that enormous aggregation of traffic?

CENTRES OF TRAFFIC.

Between the various several great centres of Central London there is necessarily a vast communication, but up to the present time most of the outlying main arteries have proved sufficient for their work.

Within the City, however, it is different. The restricted conditions under which the traffic moves within the limited number of thoroughfares will be apparent, and the necessity

of extensive improvements obvious. Although the daily occupiers and visitors in the City number *close upon a million*, it must be remembered that there is not a centre of industry in the United Kingdom, nor any important city in the whole world, that has not its office, its agent, or its representative in some way in the great Metropolis, the combination of whose varied interests assists in creating the vast traffic that pervades its thoroughfares.

The streets most crowded are Cheapside and Poultry; Threadneedle Street; Old and New Broad Streets; Throgmorton Street; Cornhill; Lombard Street; Leadenhall Street; Aldgate; Bishopsgate Street; Gracechurch Street; Walbrook; Cannon Street; London Bridge Approach; Thames Street; East Smithfield; Newgate Street; St. Martin's-le-Grand; east end of St. Paul's Churchyard; Ludgate Hill; Bridge Street, Blackfriars; Fleet Street; Chancery Lane; Strand; Drury Lane; Little Queen Street; and St. Martin's Lane.

To any one conversant from experience with the actual facts, he would not hesitate in pointing at once to the following centres as being the most congested with traffic, and which in the first place require considerable relief, viz.:—The Mansion House and Bank Centre; London Bridge by King William's Statue; Broad Street by Liverpool Street and by Throgmorton Street; Bishopsgate Street by Threadneedle Street; Gracechurch Street by Lombard Street and Cornhill; Aldgate by Leadenhall Street and Fenchurch Street. The intersection at west end of Cheapside by the Post Office on the north side, and St. Paul's Churchyard on the south; Ludgate Circus; Temple Bar; Strand by Wellington Street; Charing Cross by W.C. Post Office; High Holborn by little Queen Street.

There are also certain special and important points of centrality in the part of the Metropolis now under considera-

tion—omitting for the moment the Railway Stations. Three may be designated as those of Commerce, of Law, and of Pleasure. The first is the Bank—the very heart of the City; the second, the Law Courts; and the third, Charing Cross. A fourth may very properly be added, viz.—Smithfield, the Markets centre, perhaps as important as any.

Commercial Centre.

The Bank Centre, eminently the most crowded of all, the centre to which commercial transactions seem to tend, can only be relieved by diverting from it a considerable proportion of the traffic, *which need not necessarily pass there*, provided some practical means were supplied by which such diversion might be effected.

Legal Centre.

The locality of the Law Courts in the Strand is a fair field for improvement, and which cannot long be delayed, considering the enormous concourse daily gravitating to that centre; a reference to the plan will show the varied means of access suggested to this part without any great interference either with Fleet Street or the Strand.

Pleasure Centre.

The Pleasure Centre, Charing Cross, is the most spacious, but at the point named—viz., between the station and Post Office—some improvement is much required, and can only be obtained by the proposed Strand relief street (hereafter explained), which would obviate the necessity of a considerable proportion of the traffic from Whitehall, Piccadilly, and St. Martin's Lane passing through the Strand at all.

Markets Centre.

Smithfield is destined to be a centre of very great impor-

tance to London. Its utility and development could be wonderfully helped by proceeding without delay to make the needful convenient approaches to it. There are other Markets which would come under this head—viz., Billingsgate and Leadenhall Markets. The question of the food supply of London should have far more attention than it at the present moment receives, and the growing necessities of London will demand it before very long.

MODERN IMPROVEMENTS.

(*Coloured Green on Key Plan.*)

During the existence of the Metropolitan Board of Works, created in 1856, now close upon 30 years, many millions of money have been spent on numerous metropolitan street and other improvements, affecting more particularly Central London. Some of these have been carried out in conjunction with the Corporation of the City of London, whilst the Commissioners of Sewers have also contributed largely to the expenditure for the same.

The City of itself constructed the Holborn Viaduct and accessary Improvements at a cost of £1,715,000; Cannon Street, £540,000; New Street from Farringdon Street to Clerkenwell, £88,000; rebuilding Blackfriars Bridge, £396,000; contribution to Eastcheap Improvement, £300,000; purchase and freeing Southwark Bridge, £219,000; widening Mansion House Street, £33,000, together with many other recent minor improvements costing upwards of a further £1,000,000; with one or two exceptions, the whole of these various sums were contributed by the Corporation from its private funds. During the past 35 years, however, upwards of six millions have been expended by the Corporation for various metropolitan improvements.

These large sums are irrespective of the improvements in and about Smithfield Markets, the Markets themselves, and the New Cattle Market at Islington, which have cost the Corporation in all about £2,000,000, not a farthing of which has come from the rates. New London Bridge and approaches, amongst other works, were also built by the City at a cost of £1,021,000 in addition.

Prominent amongst the improvements by the Metropolitan Board of Works are the Thames Embankment; Northumberland Avenue; Queen Victoria Street; Theobald's Road; Great Eastern Street and Commercial Street; Southwark Street; widening Gray's Inn Road; Middle Row, Holborn; and a long list of other improvements scattered broadcast over Central and Outer London, necessitating an expenditure of upwards of *ten and a half millions* of money, for street improvements only, all of which is paid for out of Metropolitan rates collected for the purpose, or rather for paying interest on the various loans obtained under Parliamentary powers, and for the purpose of repaying the same extending over periods varying from 30 to 50 years.

These have all without doubt already effected a vast improvement in the facilities for locomotion in the Metropolis, so much so that one wonders how the business of London was carried on at all before these were effected; but London is still growing and becoming more densely populated every day, and the necessity for still further improvements is evident and unquestionable.

Amongst the various improvements now in course of completion or contemplated by the City and Metropolitan Board of Works, and for which Parliamentary powers have been obtained, are the following:—Continuation of Tottenham Court Road from Oxford Street to Charing Cross; the completion of Theobald's Road by continuing the same

from Hart Street, Bloomsbury, to Piccadilly; New Road from Gray's Inn Road to the "Angel," at Islington; Widening Ludgate Hill; Widening the west end of Fenchurch Street; Widening New Broad Street, and London Wall, Broad Street, Queen Street, Mansion House Street, and Bermondsey Street, and numerous other smaller improvements, which will all tend to lessen the inconvenience and danger now existing in Central London, and to expedite its enormous traffic.

Although so much has been accomplished, yet more remains, insomuch that what has already been done, when the matter is fairly gone into, seems a small proportion in comparison with what must inevitably follow soon, or late, from sheer necessity, for the vast and increasing numbers who traffic in the streets and have business about the City and Central London daily.

The wants of the people also increase with their numbers, hence the increase of traffic, whether it be light or heavy. The vast pedestrian traffic to and from our numerous railway *termini* must not be lost sight of, for there are now five main terminus stations *within* the City boundary, whilst altogether there are eighteen railway stations pouring forth their tens of thousands daily within the same area.

Some of them have as many as six different companies' trains running into them, so that the traffic to and from them is very great, to say nothing of the Central Markets, Leadenhall Market, Billingsgate Market, and others contiguous to the very centre of the Metropolis where large numbers of people necessarily congregate.

When to this is added the extensive Goods', Dock, and other heavy traffic, and further to contemplate what it is growing to, it is evident that considerable forethought, and judgment and wisdom are needed to be able to determine

how to provide for the wants and future requirements of so vast a multitude within so small an area.

The problem has to be faced and grappled with, and the governing authorities will have to deal with it boldly and on a comprehensive system, and the sooner London sets about this great work in earnest the better, the cheaper, and the healthier it will be for its millions of inhabitants.

FUTURE REQUIREMENTS.

(*Coloured Pink on Key Plan.*)

The Author has endeavoured to grasp the idea of what the requirements of Central London will be, say, twenty-five or fifty years hence in regard to its street traffic, both pedestrian and vehicular, for London will have, at the present rate of increase, at the earlier period named, a population not far short of *seven millions* of inhabitants; when railway stations will have increased and tramways multiplied, with factories, and workmen's dwellings, and Board schools by hundreds located in our midst, and with hundreds of thousands of workpeople and dwellers and children going in and out of them some four and some six times during the day.

It has been pointed out that in 1848 some 315,099 people, or *one-seventh* of the population, entered the City daily; that in 1860 during 12 hours only, 527,567 people entered during the day; and that it was computed that in 1866 nearly three quarters of a million entered the City daily.

It has been shown by the census of 1881 that 797,563 entered the City during 24 hours; and that by adding the City resident population of 50,526, we have a total of 848,089 people surging about the City daily. The numbers outside the City but immediately contiguous thereto would swell these figures very considerably.

It now remains to give a detailed description of the several new streets and other improvements which are suggested as a remedy for the existing unsatisfactory condition of things, not forgetting, as previously stated, to look some little distance into the future.

It would not be considered wise, were it possible, to divert the shop business from the main streets as now existing. I do not think the improvements would have that effect. The principal Centres and Streets before enumerated (pages 190 and 191) are nearly all contained in the main lines extending from the direction of Oxford Street and Charing Cross to Aldgate. The first section of streets, however, which will receive attention will be that along Cheapside and Poultry, passing in the direction of the Mansion House, as nearly all the traffic East and West tends to that point, excepting that going over London Bridge, which is partially diverted by way of Cannon Street. In the main lines of streets indicated, are located, with the exception of Piccadilly, Regent Street, &c., most of the principal shops of London.

SUGGESTED NEW STREETS.

(East of Farringdon Road.)

New Street.—No. 1. Smithfield to Tower Bridge, viâ Gresham Street.

It is proposed to relieve Cheapside, Poultry and the Bank, &c., by a new main street running East and West a short distance northward and nearly parallel thereto, designated New Street No. 1, the total length of which,—extending from Smithfield to the New Bridge approach at Little Tower Hill—would be a little over a mile and a quarter. It would not altogether, however, be a new street, but, for a consider-

able distance, it would consist of the widening and continuation of Gresham Street and Lothbury, some part of the former, however, viz: a short length, immediately east of Guildhall, is already wide enough. Along the eastern portion of Gresham Street the widening should be continued on both sides, to and across Old Jewry and Coleman Street, into Lothbury. Westward of Guildhall it should be widened, chiefly on the north side, as that would give the best line, and be at the same time the least expensive. Continuing it to Aldersgate Street, a strip of ground should be taken off from the north side of the Post Office yard. The new street at this point would intercept much of the traffic coming from the north, which would otherwise go along Cheapside. It would continue, from Aldersgate Street, across Little Britain and along Duke Street into Smithfield. The eastern portion of the street would be a continuation of Lothbury, north of the Bank of England, a portion of it being widened on the north side. Starting with the new portion of the street from the Alliance Bank at the corner of Bartholomew Lane and Throgmorton Avenue, it would pass behind the Stock Exchange and cross Threadneedle Street at the end of Old Broad Street. It would then continue in a straight line to a point near to the intersection of Bishopsgate Street, Leadenhall Street, Cornhill, and Gracechurch Street, intercepting the traffic at that important centre, where a spacious Circus would be formed, thus facilitating the traffic in all directions, including that to and from Leadenhall Market. Passing north or north-east of the New Market, slightly curving, the new street would cross over Lime Street to Fenchurch Street, through the site of Ironmongers' Hall, and, after crossing Fenchurch Street, would skirt the south-west angle and side of the Fenchurch Street Railway Station, leaving a large open space as the Station

Yard, which has for a long time required enlarging, and thence along to Little Tower Hill, in direct communication with the approach to the proposed new Bridge, which is to cross the Thames from the Tower by Irongate Stairs to Horselydown. Although this relief street, through the City from east to west, would cost a large sum, yet the cost would not be so very great as it at first appears, the recoupment, however, would be enormous; which together with the immense gain in convenience and expedition would fully compensate for the cost.

There is a large and increasing traffic eastwards to and from the Central Markets,—fast becoming a very important centre,—and which requires to be amply provided for. One of the most effectual modes of doing it would be the formation of such a street as this. A glance at the plan will at once reveal the very great advantages this line of street would confer, more particularly as, at the Smithfield end, it leads to a point north of the markets, to which converge the main lines of streets from King's Cross and the "Angel," at Islington, all intercepted by Charterhouse Street, but it would also especially constitute, with St. John Street Road, an important and continuous line of main streets from the North-western and Northern Districts, through the Market, direct to the East End, relieving the present lines of street to a vast extent. It would be without doubt the most economical that could be constructed to effect so great and important an improvement.

The property it would pass through, at some points, is very valuable; that would be the case in any important and useful scheme; but for a considerable part of its length it is only the widening of existing thoroughfares, and where the new portion of the street passes through property it is of such a class that would yield a very large recoupment for the new frontage. Every building removed in the line

of route would add greatly to the value of that portion of the land which would be left.

This street would also give considerable relief to all the now generally crowded streets east of the Bank. The new line would intercept the traffic of Throgmorton Street, Threadneedle Street, Cornhill, Leadenhall Street and Fenchurch Street, cutting across each of them, and absorbing a great deal of the traffic of each. It would be a ready outlet for all the narrower streets lying between Cheapside and London Wall, and northwards of it, and much of the western traffic could be diverted into it.

New Street—No. 1A. *Aldersgate Street to Giltspur Street.*

The utility of New Street No. 1 would be greatly enhanced if a spur were thrown out at Aldersgate Street, cutting across Christ's Hospital School to the corner of Giltspur Street, opposite St. Sepulchre's Church. This would at once relieve Newgate Street and the Post-office, by intercepting and diverting a considerable part of the present traffic, which is by far too much for its width although so recently widened. The entire length of the street would be about the same whether taken to Smithfield or to Giltspur Street. It can be only a matter of a few years before Christ's Hospital School will be moved from its present site.

New Streets—Nos. 2 *and* 2A. *"Times" Office to Moor Lane.*

The next line of street to which great importance is attached is that marked No. 2. It should commence at Queen Victoria Street on the east side of the "Times" office, and be continued in a straight line in the direction of St. Andrew's Hill, crossing Carter Lane to St. Paul's Churchyard, emerging at the corner by Dakin's tea warehouse. Thence along the north side of St. Paul's Church-

yard, setting back the churchyard railing on the one side and improving the line of frontages on the other, thus making the front uniform throughout. This would doubtless materially improve the character of the shops. On reaching Cheapside the houses west of Peel's statue, between the Churchyard and Newgate Street, should be set back nearly in a line with the New Post Office; this is much needed, considering the great amount of traffic at this point. Starting at the south end of the Post Office or near Sweeting's corner, and leaving a space enclosed, as now, a street should run in a north-easterly direction across Foster Lane, east of Goldsmith's Hall, to Gresham Street by Wood Street corner. This would at once link the Post Office and Newgate Street with the New Street No. 1. already described, and divert all the traffic *en route* for the north-east districts. Crossing Gresham Street as widened, New Street No. 2A would continue in the direction of Aldermanbury, that street for about two-thirds of its distance being widened on the east side, the next short street, Aldermanbury Postern, being similarly dealt with. By widening Moor Lane and Type Street on the east side, and widening out the narrow passage between the two, Chiswell Street would be reached, Bunhill-Row follows a direct continuation to the City Road, whilst Finsbury is immediately east of it. By this means a most convenient link would be formed between Westminster, Victoria Embankment, Blackfriars Bridge, and Cheapside; whilst Queen Victoria Street would be spared the traffic going northwards, and north-east; neither would any traffic going in that direction require to pass the Bank for that purpose, nor to go in a roundabout direction,—viz., *viâ* New Bridge Street and Ludgate Circus—to get there. It would also, to a very great extent, relieve Ludgate Hill, Newgate Street, and Fleet Street, and all the streets in its course by

intercepting the traffic, whilst the property taken for the purpose, considering the value of the New Street, would be inconsiderable. The convenience for the traffic going to Westminster or Charing Cross from the City, or from the East and North-East, by avoiding Fleet Street, would be very great.

New Street—No. 3. St. Paul's Churchyard to Thames Street.

The difficulty of crossing from north to south of the City without passing the Bank or crossing directly over a congested street is one of the most important problems to be solved in the whole of this question. The last-named street would effect this in a great measure so far as the Western and Southern traffic is concerned without any great contour; but, by widening the east end of St. Paul's Churchyard by setting back the railings, taking off the western corner next Cheapside and also by removing the projections of St. Paul's School and of the adjacent buildings, the traffic accommodation could be very considerably increased. The better plan, however, would be to remove the whole of the block from Cheapside to Watling Street, making Old Change the new front to St. Paul's. A diagonal street should run thence to Thames Street, obliquely crossing Queen Victoria Street, by Knight Rider Street, and by a continuance of the same to Queenhithe, a direct communication to and from Upper Thames Street would be effected. It is manifest this would be a great improvement and would be heartily welcomed by the warehouse owners and wharfingers in that locality, for at present there is no useful outlet for vehicles from Thames Street westwards, between Queen Street by Southwark Bridge and Queen Victoria Street by Blackfriars Bridge.

The gradients of the two sections of this street would be

1-100 and 1 in 20 respectively, the latter being somewhat easier than that of the south end of Queen Street, and would compare favourably with the gradient of the new street from Monument Yard to Billingsgate, now in course of formation by the Commissioners of Sewers. The length, however, of the steeper portion would only be about 500 feet. By commencing the Thames Street end of this street further eastwards than Queenhithe the gradient could be greatly improved. It will be seen on reference to the Plan that this line would take some valuable warehouses, but the new frontages would also be valuable, and would probably recoup the entire cost.

New Streets—Nos. 4 *and* 4A. *Smithfield to Whitechapel High Street viâ London Wall.*

It is proposed to form another line of street, running East and West through the City, still further North of the proposed extension of Gresham Street, and nearly parallel with it. Considering the great and increasing traffic to and from the Central Markets, and more particularly the Goods Depôts in the vicinity, at Whitecross Street, Farringdon Road, and the splendid group of Markets themselves in that locality, special attention should be given to it. To a great extent this traffic is eastwards, or to and from the several Goods Depôts at Farringdon Street; Whitecross Street; Eldon Street, off Mansell Street; Whitechapel; Deptford, &c. Nor must the business of the St. Katherine Dock Warehouses, Devonshire Square; the Victoria Dock Railway Depôt, and the vast Dock business generally still further East be lost sight of. There is also the 'bus and 'cab traffic to the Broad Street and Liverpool Street Stations, and from the other Stations along the line of railway to Farringdon Road, which would all be received into this street and dispersed from it. New Street, No. 4,

therefore is intended to start from the Smithfield centre and to run almost due east to Aldersgate Street, thence slightly curving round into and through London Wall and Wormwood Street, both of which would be widened throughout—Wormwood Street is now being widened and a considerable portion of London Wall will fall into the Corporation in about 15 years time—crossing Bishopsgate Street near Camomile Street it would continue in a straight line across Devonshire Square to Whitechapel and end at the Commercial Road and Whitechapel intersection. These two latter are amongst the broadest streets in London, and form the two main arteries to the East, to the East and West India and other Docks, and the shipping locality generally. This new street would be a fitting continuation of Commercial Road westwards.

From the same point at Bishopsgate, for all traffic going towards the New Bridge, greater facilities should be given by widening and improving Camomile Street, Bevis Marks, and Duke Street, all parts of the same line, forming a new street emerging at Aldgate and continued into the Minories, thus comprising New Street, No. 4A, a further direct line of communication to the new Tower Bridge. Aldgate at this point should be widened from Fenchurch Street to the Minories. It is also obvious that this new line of street would be a great acquisition for the heavy traffic before referred to, and would enable the greater part of it to be diverted from the direction of the Mansion House and Bank Intersection.

New Street—No. 5. Whitechapel to Tower Bridge.

From the intersection of Whitechapel and the Commercial Road a line of street should be made which might be termed the Approach Road to the proposed New Bridge at Little Tower Hill. This street would evidently collect

a very large portion of the traffic of the eastern districts. It would run in a South-West direction to Mansell Street by Great Ailey Street. Mansell Street would be widened and continued past the Victoria Dock Railway Depôt, it would cross Royal Mint Street and be continued to Little Tower Hill and the Bridge, and thus intercept a large portion of the traffic that now, of necessity, goes towards London Bridge.

It should be mentioned here that Royal Mint Street requires to be improved by setting back the frontages of Royal Mint Street as shown, and continuing the improvement to Cable Street, the latter also being widened, as far as Cannon Street Road, to meet the necessities of the Dock traffic. This would materially facilitate the traffic of that locality, and give a ready outlet into this street and to the New Bridge Approach. Upper East Smithfield should also be widened to St. George Street and High Street.

In continuation of this latter street on the west of Little Tower Hill an opportunity presents itself to make the continuation of Eastcheap complete through Trinity Square, by setting back a part of the railing, and by widening George Street, north of Postern Row—or removing the block of buildings altogether—or Postern Row might be widened instead. There would then be a complete route between London Bridge approach, and the New Bridge approach, to the East of London, *viâ* Eastcheap, and the destination of the traffic would be made easy in whichever direction it might be going.

New Street—No. 6. Viâ Middlesex Street.

From Great Ailey Street the widening of Mansell Street should be continued northwards to Whitechapel, and it may be hereafter of very great advantage if it were continued across Whitechapel and New Street No. 4 in a

north-westerly direction, by widening Middlesex Street and Sandy's Row, thus, intercepting some of the traffic from New Street No. 4 going towards the proposed Bridge and finally opening out into Bishopsgate Street, opposite Sun Street, bringing Barbican, Chiswell Street, &c., in a line with it, making a continuous street from the New Bridge *viâ* Mansell Street into Finsbury, the same being also in a direct line to the Markets.

New Street—No. 7. Bread Street to Aldermanbury.

The traffic going direct North and South should be further assisted by widening Bread Street from Queen Victoria Street to Cheapside, continuing the widening through Milk Street, west of the Old City of London School, thence into Aldermanbury, being intercepted by New Street No. 1. This street would also greatly assist in getting quickly northwards from Thames Street, with which it would communicate direct through the lower portion of Street No. 3.

New Street—No. 8. Old Bailey to Blackfriars Bridge.

Old Bailey should be widened and continued across Pilgrim Street into Broadway and down Water Lane to Queen Victoria Street, opening up and improving the present tortuous narrow lanes in that locality and materially facilitating access to Ludgate Hill Station, the approach to which is in great part from this direction. It would also give improved and ready access from Ludgate Hill to the proposed new Station now being constructed at the West End of Queen Victoria Street.

New Street—No. 9. Thames Street to Fenchurch Street Station.

A further short street is much needed from the lower end of Thames Street, in other words the extension of

that street into the new Great Tower Street, and continued, by widening Seething Lane, to Fenchurch Street Station. The proposed new street from the Monument to Thames Street, now being constructed by the Commissioners of Sewers before referred to, would not render this unnecessary; on the contrary, the construction of that street seems to point to the need of an outlet from Thames Street in the direction of the Tower as a necessary complement to it, or, it is feared, the confusion at London Bridge will not be improved considering the increased traffic from Billingsgate through the new street, which would all meet at this point. Besides a great deal of the traffic will hereafter go over the new Bridge, and, considering the congested state of the traffic at Billingsgate, an outlet from Thames Street is required in that direction, indeed will become imperative, thereby considerably relieving it. Thames Street, of course, should be widened from end to end, a line being laid down, taking off a strip here and there, on one side or the other in order to obtain the best line where facilities offer for so doing. An improvement of this kind, already begun in places, would greatly improve locomotion and be extremely beneficial to the wharves and warehouses in that locality.

New Street—No. 10. *Shoreditch Church to Bethnal Green Road.*

A new connecting street between Old Street Road opposite Shoreditch Church and Bethnal Green Road is required. It should commence immediately north of St. Leonard Church, crossing Virginia Row (in an oblique direction), also Mount Street and Brick Lane, finishing at the North East District Post Office. This would be a fitting completion of a great improvement, of which a considerable part is already carried out by the Metropolitan

Board of Works, and which, when continued to its western extremity, with this connecting link added, a direct line of street would exist from Victoria Park to Oxford Street and Piccadilly. A slight though useful improvement in this locality might be effected in Hoxton Street by widening and continuing Fanshaw Street into it.

New Street—No. 10*a*. *Bethnal Green Road to Hassard Street.*

From the eastern end of this street a new street should run almost due north to meet the south end of Hassard Street. For two-thirds of its length it would consist of a widening of the Gibraltar Street end of New Street No. 10. North-east of this street a small but important improvement could be effected by *cutting through a short length* of houses to make a continuance of Great Cambridge Street to Barnet Street. Both of these streets would bring Columbia Market within easy reach of a much larger population. Eastward of this street a small but useful improvement could be made by a continuation of Prescot Street to Back Church Lane.

New Street—No. 11. *Great Eastern Street to City Road.*

Another important connecting street is required, between the City Road and Great Eastern Street, crossing Old Street, a little distance westwards of the last named improvement. This would give a direct main line from the "Angel" at Islington to the proposed New Bridge. It would divert all the traffic from the City Road, Old Street, and Shoreditch, going eastward, direct into Whitechapel, thence along the proposed Approach Road to the Tower Bridge.

New Streets—No. 12 and 12a. Amwell Street to Smithfield and Farringdon Road to St. John Street.

Some improvement is also required north of the Central Markets, to effectually connect the same with the North of London. This could be effected by connecting Amwell Street and Rosoman Streets with Clerkenwell Green *viâ* Red Lion Street. Red Lion Street should be opened out southwards and continued, which, together with slight improvements at the bend, by, and on each side of, Cross Street, would conveniently end directly opposite the Markets. In this case both Rosoman Streets would have to be widened and continued through a locality studded with Courts and angular, tortuous streets and passages near the House of Detention; this, as much as any part of London, requires improvement, and substituting a main line direct into Clerkenwell Green opposite the Session House. This street, moreover, at Rosoman Street end, would join the new street about to be constructed by the Metropolitan Board of Works from Gray's Inn Road to the "Angel," Islington.

St. John Street requires widening in places, whilst, if Corporation Row and Bowling Green Lane were also widened, with a possible widening of Lever Street eastward, a direct communication could be obtained West and East from Farringdon Road to the City Road.

Before leaving the improvements eastwards of Farringdon Street, which pretty nearly divides Central London, East and West, a few other improvements should be pointed out, which suggest themselves to one as being important, and which will become imperative in the near future. For instance, the widening of King Street, thus making a good approach from Southwark Bridge to Guildhall. The widening of Queen Street is now being completed by the Commissioners of Sewers. The widening of a part of Coleman Street,

also of Basinghall Street. The widening of Threadneedle Street already partially accomplished. The widening of a part of Throgmorton Street, near the London and Westminster Bank. The widening of Broad Street throughout its entire length, already commenced, cannot be long delayed, to provide for the immense pedestrian traffic to and from the three Railway Stations at its northern end. The widening of Fenchurch Street and Leadenhall Street in places and at their junctions with Gracechurch Street and Aldgate respectively. The widening of Walbrook from the Mansion House to Cannon Street. The traffic of this street is very much increased since the completion of the Inner Circle Railway which has a Station at the end of the street. Central Street, a continuance of Golden Lane, requires widening to get direct commmunication northwards into City Road. The widening of Hoxton Street, a small improvement off Columbia Road. The widening of Long Lane between Aldersgate Street and the Markets is urgently needed. If East Smithfield were widened and that improvement continued through George Street, &c., it would be a great convenience for the extremely heavy traffic of that locality. Narrow streets, in such cases, are very expensive to keep in repair.

SUGGESTED NEW STREETS.

(West of Farringdon Road.)

The Western traffic accommodation also requires very great consideration. The locality about the Law Courts particularly needs serious attention, as it has already become a very important centre. Access to the Courts should be made easy from all parts of London. The traffic of the Strand can scarcely be increased, excepting at that part immediately opposite the Courts, which is generally

sufficient, and at the point near Child's Bank, where it is being widened, as the property falls in, thus rendering it of sufficient width for all the traffic of the locality.

New Street—No. 13. *High Holborn to Royal Courts of Justice.*

In the first place, a new street should be constructed in continuation of Southampton Row southwards, by widening Little Queen Street, and continuing it through the buildings between Great Queen Street and Sardinia Street, thence, by a gradual curve, into Clare Market and, through St. Clement's Inn, to St. Clement's Church. The property in this locality is of such a character that the entire removal of the existing buildings would be a great sanitary advantage, and valuable building frontages would be obtained to the New Street. Carey Street, Portugal Street and Lincoln's Inn Fields should be opened out into it. This street, it will be readily seen, would form a continuation of a main thoroughfare direct from Camden Town to the Law Courts, which would be of great public advantage.

One could not fail to mention, when referring to the improvements about, and approaches to, the Law Courts, that Great Turnstile and Newman's Row should be widened, on the north of Lincoln's Inn Fields, and the remainder of Searle Street widening on the south side. Bedford Row requires to be continued into High Holborn.

New Street—No. 13*a*. *Drury Lane to Royal Courts of Justice.*

From the intersection of Long Acre by Drury Lane and Great Queen Street, a spacious street should be formed in a line with Great Wild Street, widening the same on its northern side and Vere Street on its southern side, to join the last-mentioned street opposite Portugal Street. This

would not only form a continuation of Long Acre and Piccadilly *viâ* Cranbrook Street and Leicester Square in a direct line; but the cutting off of the corners at the junction of Long Acre and Great Queen Street would be an improvement at that point, by rounding off the corner at Broad Street and by widening Drury Lane as indicated, would give the best and most direct approach to the Law Courts from Oxford Street and Tottenham Court Road.

New Street—No. 14. *Drury Lane to Regent Street.*

From Drury Lane, in continuation of Great Queen Street westward, a new street should be made across Endell Street to Seven Dials, thence crossing over the intersection of the proposed streets—from Tottenham Court Road to Charing Cross, and from Oxford Street to Piccadilly respectively—also crossing obliquely over Greek Street, Dean Street, and Wardour Street, it would curve slightly into Broad Street, and be continued into Regent Street. This would open up Soho, a locality that much needs it, and it would give a very useful thoroughfare direct from Regent Street to the New Law Courts, the Strand, or Holborn without having to go around by Oxford Street or Leicester Square as at present.

The continuation of Dean Street into Leicester Square, a very short length of new street, would be an advantage.

New Street—No. 15. *St. Martin's Place to Royal Courts of Justice.*

The principal object, however, is to relieve the Strand from its ever-increasing burden, and the only practical way of doing this is by forming a second line of traffic just north of it, commencing at St. Martin's Place north of St. Martin's Church. It might be of advantage if the new

street commenced from Haymarket (*see Plan*). There should be a broad outlet from Chandos Street. Maiden Lane, Tavistock Street, and York Street, should be all widened, as shown, and the street curved around into Drury Lane, and by widening Wych Street on the north side a direct approach would be obtained to the front of the Law Courts. From Drury Lane a fork street should also be made, crossing over No. 13 Street from Holborn, to meet the prolongation of Carey Street, so that an approach both to the front and rear of the Law Courts could be obtained. An arm should also be thrown out towards the Strand opposite the Church of St. Mary-le Strand, the porch being removed for this purpose, thus getting a ready access from the Strand, at this point, for all traffic going towards High Holborn, Oxford Street, and the West and North-West.

The Strand itself should also be further improved by widening Holywell Street throughout, and also widening the Strand on the north side from King's College to the point opposite Arundel Street. The Strand, moreover, at its western end should be continued through Spring Gardens into the Mall, giving a direct line from Buckingham Palace to the City, thus improving the New War Office and Admiralty site.

New Street.—No. 16. *St. Clement Danes' Church to Temple Station.*

Very considerable relief to the Strand traffic could be gained by making a diagonal street from St. Clement Danes' Church to the Temple Station so that the traffic may be diverted to the Embankment, whilst much time would be saved in getting to the Law Courts from the West and South-West Districts by this route. It needs but few words to show how very important each one of

these new streets would be, especially considering the frequency with which the Strand is disturbed for paving, gas, and water and other works, during which time all the traffic is deranged. The gradient of this street would be a great improvement on that of any of those that now run due North and South in the vicinity.

New Street—No. 17. *Fleet Street to Blackfriars Bridge.*

Fleet Street, as before referred to, also requires considerable relief, and besides widening the street on an agreed plan, in places as opportunity occurs, one could confidently recommend the formation of a new street commencing from the bottom of Fetter Lane. It should pass obliquely through Serjeants' Inn, across Bouverie Street and Tudor Street, by Whitefriars Street, and curve round on the vacant City land into New Bridge Street, by widening William Street, north of the Royal Hotel. This would have the effect of avoiding the greater part of Fleet Street, Ludgate Circus and Ludgate Hill, so that whether the traffic be going east or north-east it could readily pass either along Queen Victoria Street or through Street No. 2 to St. Paul's Churchyard and get away in that direction.

New Streets—No. 18 *and* 18*a. Holborn Circus and Gray's Inn Road to Record Office.*

From Holborn Circus, at Meeking's corner, proceeding through Bartlett's Buildings, a curved street, No. 18, should be constructed direct to the Record Office. From this point Fetter Lane should be widened to Fleet Street, where there should be a spacious circus, and whence New Street No. 17 would start.

In the next place Chancery Lane should have attention. In order to obtain relief for it a continuation of the line of Gray's Inn Road might be made straight through

Staple Inn, across Castle Street to Fetter Lane by the Record Office, constituting New Street No. 18A. At the latter point there should also be an important intersection or Circus.

New Street—No. 19. Bride Street to Chancery Lane.

On the north side of the Record Office a new street of good width should be constructed westwards into Chancery Lane, nearly opposite Carey Street, thus continuing the street from Meeking's corner direct into Chancery Lane, and the Law Courts. From the same intersection eastwards this street should be continued into Stonecutter Street and Farringdon Street, by crossing over Great New Street and widening Little New Street.

By these last-named improvements means of access urgently needed to the Law Courts from the direction of Holborn, Holborn Circus and Ludgate Circus would be supplied without the necessity of passing along Fleet Street. It would be of equal importance in getting quickly into Fleet Street from Gray's Inn Road, and the North, instead of by the present crowded, circuitous, and narrow routes of Holborn and Chancery Lane respectively.

SOUTH SIDE OF THAMES.

New Street.—No. 20. Tower Bridge to Bermondsey New Road.

On the south side of the river the approach to the upper level of Bridge, by means of a viaduct passing over Tooley Street, should be continued to Bermondsey New Road, thereby giving direct communication between the present great arteries on the south side of the river, viz.: Old Kent Road, New Kent Road, and Great Dover Street, and those mentioned on the north side. Ready access would,

therefore, be obtained to the proposed New Bridge from this locality. If this continuation were not made, a labyrinth of narrow streets would intervene between the new bridge and these important arteries, rendering it unapproachable from the great thoroughfares on the south side, consequently its use would be very much diminished. This new route could be made the chief means of access to the East from the South, also from Westminster and Lambeth Bridges.

New Street—No. 21. *Tower Bridge to Waterloo Road, &c.*

From the low level approach to the New Bridge and from Tooley Street, and further eastwards on the south side, a new street should also be constructed by way of Snowsfields to the Borough High Street, and continued to Southwark Bridge Road, across Great Suffolk Street, and be further continued into the Waterloo Road, near the "Victoria," by widening the present Friar Street and Webber Street. From this trunk three branch streets should run, one, No. 21A, being a continuation of Great Dover Street into Southwark Bridge Road by Southwark Street, another, 21B, would consist of Gravel Lane being widened and continued into Southwark Street by Blackfriars Station, and a third, 21C, a short branch from Snowfields into Tooley Street in a line with the Thames Subway. By this means the enormous traffic going north and east, instead of passing over London Bridge, would be intercepted and taken over the New Tower Bridge.

Two fork streets, 21D and 21E, in continuation of Tooley Street, eastwards to Abbey Street, and thence branch off towards Neckinger Road and Jamaica Road respectively as shown, would prove of advantage to the locality.

Improvements of less magnitude on this side of the river, though of some importance, might be effected by connecting

Belvidere Road and Commercial Road by a more direct way, and by continuing the latter street eastwards by widening and straightening the existing narrow and crooked streets into the proposed approach to the southern embankment.

SUGGESTED SOUTHERN EMBANKMENT.

Westminster to Blackfriars.

For a long time past it has occurred to the Author that an embankment on the south side of the river from Westminster to Blackfriars Bridge, would prove of great utility, not only as an important main artery of traffic in the Metropolis but also as a means to prevent the constant overflow of the Thames, with its accompanying dangers and losses. It should form a continuation of the line of the Albert Embankment by St. Thomas's Hospital, access being obtained to it from Westminster Bridge Road by the side of the bridge with a footway connecting the two under Westminster Bridge. It should be 60 or 65 feet wide, leaving a space between it and the wharf frontages for barges to lie alongside, the inside waterway being approached here and there by means of lock-gates through the embankment, with the usual mechanical means of opening and closing. These lock-gates could be kept closed when the tides ebb so that the wharves might always have water to unload either at high tide or at any time of the tide, as may be needed.

This embankment would hide the present very unsightly appearance of the south bank of the river, particularly at low tide, and effect a very great improvement without the necessity of a very large expenditure of public money to compensate the several wharfage-owners for interference with either their premises or their rights. It would also be a great advantage to all frontagers and barge owners,

as barges could load and unload at all times of the tide. The embankment could run underneath the South-Eastern Railway and Waterloo Bridges to Blackfriars Bridge, and approaches to the Embankment for pedestrians could be made by means of steps at both of these bridges, also a carriage-way approach for vehicles could be formed at Blackfriars Bridge in continuation of Southwark Street. The embankment might, with advantage, be continued to London Bridge, and join Tooley Street by passing first underneath Blackfriars Bridge and the Railways to Bankside, thus forming a new broad street along the south bank of the river in place of the present narrow and crooked streets of the locality. The remainder of the length of this street would pass, in its course, under Southwark Bridge and the South Eastern Railway, to Tooley Street, under London Bridge, with another approach from London Bridge, as now existing. This would give an additional important thoroughfare from East to West on the South side of the river from Westminster to Bermondsey.

This Southern Embankment would not greatly reduce the width of the river. It would still be as wide at any point where interfered with as it now is between the Houses of Parliament and St. Thomas's Hospital, whilst it would be much wider than the river is either at Southwark Bridge or London Bridge.

THE PROPOSED NEW BRIDGE AT THE TOWER.

This is a very important question. A central feature of any considerable system of Metropolitan improvements would be an additional bridge below London Bridge, and which, of necessity, cannot much longer be delayed, as it will be impossible to carry on the vast business of the East of London for any considerable period without it, except at great inconvenience and loss.

A point somewhere near the Tower of London has been fixed upon as the best position for a New Bridge, and Lt.-Colonel Haywood, nineteen years ago, suggested Irongate Stairs, at the foot of Little Tower Hill, as being the most convenient point for a new bridge to start from on the north side, finishing at a point slightly above Horseydown Stairs on the south side. The approaches would of course extend a considerable distance further on either side.

Such a bridge would unquestionably be of great benefit, and would very materially relieve London Bridge, and not only so, but also the main lines of streets leading to it on both sides of the River from Shoreditch to the "Elephant and Castle," and particularly the following, viz.: Leadenhall Street, Fenchurch Street Eastcheap, King William Street, Cannon Street, Lombard Street, and Cornhill—as from all these streets the traffic is constantly being blocked, as it converges upon the only one line running northwards on that side of the river, the consequent inconvenience is increasing daily. To say that the widening of London Bridge or any other proposal whatsoever short of a New Bridge could be adopted which shall be equal to the requirements is little short of folly. At present the traffic at the approaches to London Bridge both North and South is at times so continuously and hopelessly blocked as to make the question of relief one of immediate necessity.

Referring to the question of widening London Bridge, the Engineer to the Commission of Sewers, in a Report, says on this point:—"The widening of London Bridge by throwing out footways on either side should be adverted to. This is physically practical, although it could only be carried out to the utter destruction of the architecture of one of the finest bridges of Europe; it would not, however,

help the difficulty of the traffic, as it is upon the approaches, on each side of the bridge, where the obstructions mainly take place. At both of those places there is the confluence of several streams of traffic, the carriage-ways, it is true, are not quite so narrow there as the bridge itself, but they are subject to carts standing to load and unload, which the bridge is not; and therefore, widening the bridge would be useless unless the approaches were made wider also. The proposal to widen London Bridge in the manner described is indeed but one of those expedients by which it is sought to procrastinate large improvements in order to prevent immediate outlay, with the result that the difficulties for the time may be lessened, but the expense of the improvements, ultimately inevitable, is augmented. Such expedients are wanting in true economy."

In the year 1879 the Metropolitan Board of Works laid before Parliament a scheme for a high-level bridge to cross the river by one span between Little Tower Hill and Horselydown, giving a height of about 80 feet above the waterway, sufficient for the largest vessels to pass under on lowering their topmasts. The merits of this scheme failed to commend themselves to a Select Committee of the House of Commons, as, after a long inquiry, extending over twenty-seven days, the Committee came to the conclusion that the preamble of the Bill had not been proved.

In the years 1881 and 1882, after an interval which had afforded time for the public discussion of the question, and for the mooting of any proposals which might seem to be attended with advantage, the Board, by one of its Committees, entered into conference with the Bridge House Estates Committee of the Corporation, whose attention had also been occupied with the subject. The conference was initiated in the hope that by friendly discussion, and, if practicable, by joint action on the part of the two bodies, a

way might be found of satisfying the public wants without injuring the interests of trade and shipping in the Port of London. The issue of the conference was not favourable to the realisation of this hope. The City authorities, indeed, expressed doubts whether there was such a proved need of a new permanent way across the river as to justify the great expenditure that the formation of a new bridge or tunnel would entail, and they were not prepared to give their aid in the furtherance of either the one or the other.

Finding thus that it could only rely upon its own action and its own resources, the Board referred the whole question to one of its committees, and the Board's engineer, having been called upon by the committee for a report, brought forward a comprehensive scheme embracing three new lines of communication, namely—(1) a high-level bridge between Little Tower Hill and Bermondsey; (2) a tunnel between Shadwell and Rotherhithe; and (3) a tunnel between Blackwall and Greenwich and Woolwich. The total cost of this comprehensive scheme was estimated to exceed five millions sterling.

The Metropolitan Board had always regarded the project of providing accommodation for the traffic between the north and south sides of the river below London Bridge as one the accomplishment of which must to some extent depend upon the continuance of the subsidiary revenue derived by the Board from the London coal duties. The duties, as now enacted, are leviable until July, 1889, the Board's own interest in them, however, expiring one year earlier.

The Board therefore determined to appeal to the Government for a continuation of the coal duties, but the result was unsatisfactory. In 1882 a joint application by the Metropolitan Board of Works and the Corporation of

the City of London was made with the same object, but with a like result. There being an objection to these duties as a source of revenue, the Secretary to the Treasury also hinted at the growing impatience of the public under taxation. The Board, however, defended its financial policy, pointing out that although the repayment of the cost of their improvements is spread over a certain number of years, yet care had always been taken not to saddle upon ratepayers of the future those burdens which should properly be borne by the present generation. At the same time the Board was quite satisfied that there was a need in the eastern districts of London for better accommodation for the traffic between North and South, and that the inhabitants had a good claim for this need to be supplied.

The scheme of a bridge, whether at a high or low level, was attended with many difficulties and objections, on the score both of expense and of interference with the trade and shipping of the port. After due deliberation, therefore, it was ultimately resolved to apply to Parliament for power to make a subway or tunnel under the river from Nightingale Lane on the north side to Dockhead on the south. Further down the river it was proposed to establish two steam ferries for the conveyance of vehicles, with proper approaches on each side. It was felt that these ferries would afford some accommodation for the traffic in the districts far east, although not all that might ultimately be required; and that they could be superseded by tunnels or subways when such improved methods of transit might be found more urgently necessary. The plans for these works and the Bill by which power is sought to carry them were deposited as required by the standing orders of Parliament, with a view to sanction being obtained for them.

Other bridge schemes were also before the Parliamentary Committee, and considerable evidence was heard, the

result being that the Committee, in lieu of approving any one of the schemes before them, and after full deliberation, reported in favour of the erection of a low-level bridge, with convenience for shipping to pass, near the Tower, and suggested Little Tower Hill as the most suitable position, at the same time intimating that the Corporation of the City of London was the proper authority to have the control of the matter. The Court of Common Council, on receiving this intimation, referred the whole matter to the Bridge House Estates Committee to bring up a report; and on the 28th day of October the Court resolved to apply to Parliament for powers to construct a bridge from the point named across the Thames to Horselydown, with an approach from Tooley Street on the south side. The Chamberlain at the same time reported that an amount (£750,000), equal to the estimated cost of the bridge, could be raised on the Bridge House Estates, and recommended that the same be applied to the construction of the new bridge. The Report further stated that plans had been deposited for the consideration and approval of Parliament next Session. There is now every reason to believe that the long-looked-for new bridge will be commenced possibly some time next year, and should it be the kind of bridge actually required, will be one of the most important acquisitions to the Metropolis in the way of public improvements since the Thames Embankment was constructed. This can only be the beginning of a series of new streets and other improvements which must necessarily follow, in the East of London, so soon as the New Bridge is fairly in hand.

No doubt considerable objections will be raised, even up to the very last, by certain classes, to the carrying out of so great an improvement as an additional bridge, particularly by the shipping interest, whose rights must doubtless

be considered, and should weigh somewhat, as to the kind of Bridge to be constructed, but the ratepayers would do well to watch the matter, to ensure the speedy accomplishment of their wishes. It may, however, take the form of expressing a desire to widen London Bridge or to have a tunnel in lieu of a bridge, either of which would be manifestly inadequate to the public requirements.

THE KIND OF BRIDGE REQUIRED.

The kind of bridge which would be the most suitable for the traffic of that locality, whether a high-level or low-level bridge, a swing bridge, or a lifting, otherwise called a Bascule bridge, has been the subject of much discussion. Personally the Author would favour the idea of a *high and low-level bridge combined* in one structure, for the following reasons :—Neither the high-level nor the low-level of itself would meet the public needs. Accommodation must be provided for the shipping immediately below London Bridge; a low-level bridge, therefore, without an opening for shipping would not do. A low-level bridge with an opening will necessitate the frequent stoppage of traffic, and the traffic on the north side will have to descend to the approach. A new bridge at the Tower is certain to be the precursor of considerable improvements in the vicinity. The kind of bridge, therefore, that would be of the greatest utility should be selected, and it is hoped the best of engineering skill will be brought to bear upon the question.

The design thus far approved by the Corporation is a Bascule bridge, designed by the City Architect, the centre span of which—200 feet wide—will be lifted in two halves, each of which will be suspended by means of chains and balance weights when closed, and, when required to be opened, will be lifted, as it were, on hinges, each half

standing upright against the side towers, up which towers the pedestrians would have to ascend, 100 feet high, to cross over the centre opening at the higher level, *i.e.*, in case they should be in a hurry to get across, instead of waiting for the opening to be closed. One cannot help thinking, however, that the saving of time would not be very great, to say nothing of the task of ascending 100 feet to descend again on the other side, and so to proceed on the journey of crossing the bridge, whilst the terrible inconvenience and crush of the traffic waiting, possibly for an hour or so at a time, during which the bridge would be open for shipping is a matter of the most serious importance.

It will be remembered that there is a steep descent both at Great Tower Hill and Little Tower Hill, the level at the top of each being 43 feet and 40 feet 5 inches respectively above high-water mark. The height of a low-level bridge should be not less than 40 feet—(London Bridge is 47 ft.; Southwark, 46 ft.; Blackfriars, 37 ft.; and Waterloo, 50 ft. above high-water mark). It will be seen that a very slight extra incline in the approach would give an extra 30 feet rise,—the height of the upper level of a combined bridge, which could take the traffic of the higher level, whilst the lower level could be made an outlet from Lower Thames Street by a slight incline to the bridge approach.

The object in favouring a combined high and low level bridge is to avoid the repeated stoppages of vehicular traffic on the bridge when the centre span is open for shipping, which must always be a source of great annoyance and inconvenience. With a combination bridge the traffic on the higher level, always considerably more than that on the lower, would never be interfered with, shipping or no shipping, whilst the low bridge could be lifted vertically by hydraulic means to the underneath side of the high-level,

leaving a clear way for the shipping purposes, and the traffic interfered with would not be nearly so great as that passing continuously overhead. The pedestrian traffic could pass from the lower to the higher level by staircases, or lifts, and proceed on the journey unimpeded when the lower bridge is open. The design the Author considers the most suitable for the purpose is illustrated herewith.

Cost of City Bridges.

The Corporation, it has been pointed out, will erect the proposed new bridge at the Tower, and construct the approaches. The bridge alone is estimated to cost £750,000. The approaches will cost at least another £500,000, none of which will be included in any figures which will be given as an estimate of the probable cost of carrying out the improvements comprised in this Scheme, as it will not have to be defrayed by the ratepayers. The bridges already erected within and by the City have cost as follows :—

Date.	Name.	Bridge.	Approaches.	Freeing.	Total.
1832	London Bridge.	£483,732 *	£1,021,421	£30,000	£1,535,153†
	Blackfriars :—				
1760	1st Bridge . .	230,000	—	—	230,000
1863	2nd Bridge .	396,131	—	—	396,131
‡1864	Southwark .	—	—	218,868	218,868
	City Cash expended on the three City Bridges to date .				£2,380,021

Cost of Suggested Improvements.

It ought not to be said that London cannot find the means of carrying out such improvements as are called for by the actual wants of the Metropolis. When its wealth is

* Exclusive of Treasury Contribution of £500,000.

† Exclusive of removing old London Bridge—total cost to City, £1,767,153.

‡ Southwark Bridge was first opened free in 1864.

compared with that of the provincial towns of the United Kingdom, as represented by a comparative rateable value, such a plea is groundless. Tables are annexed of the several boroughs of the Metropolis, and of 17 of the largest provincial cities and towns of England, showing the net profits charged on income duty in each under Schedule D for 1879-80. By this it will be seen that the Metropolis is assessed under Schedule D at more than twice the amount of them all, indeed, with an excess of four millions to spare, whilst the City alone is equal to more than the whole of the 17 largest towns taken together.

TABLE of the 17 largest incorporated cities and towns of England and Wales, showing their population, the rateable values, and the net profits charged to Income duty in each case, under commercial Schedule D, for the year 1879-1880 (exclusive of dividends on public stocks and funds), as compared with the City of London and the Metropolis.

No.	Population, 1881.	Name.	Borough Rate in the £.		Rateable Value '79 & '80.	Profits charged under Schedule D.
			s.	d.		
1.	552,455	Liverpool. . .	3	10½	£3,211,344	£9,980,976
2.	341,508	Manchester . .	3	5¾	2,296,537	8,832,192
3.	400,757	Birmingham . .	3	6½	1,454,329	3,421,056
4.	309,126	Leeds . . .	4	2½	1,102,691	2,127,168
5.	206,503	Bristol . . .	5	7	865,623	1,648,656
6.	284,410	Sheffield . . .	2	11	914,544	1,927,056
7.	145,228	Newcastle-on-Tyne .	3	4½	724,281	1,648,080
8.	180,459	Bradford . . .	3	10½	885,477	1,719,792
9.	154,250	Hull, Kingston-upon	5	3	578,218	1,016,640
10.	111,631	Nottingham . .	5	0	696,007	951,312
11.	152,547	Stoke-upon-Trent .	4	8	59,632	897,648
12.	128,407	Brighton . . .	4	3	593,671	895,776
13.	164,303	Wolverhampton .	6	6	237,415	763,344
14.	176,233	Salford . . .	3	5	795,406	728,256
15.	124,960	Sunderland . .	3	8	395,300	700,000
16.	152,511	Oldham . . .	3	4	474,096	683,040
17.	122,351	Leicester . . .	3	8¼	383,000	681,600
					15,667,571	£38,622,672

So far as territorial area is concerned, Leeds is the largest provincial town in Great Britain, covering 33¾ square miles. Sheffield follows with 30¾; and then come Birmingham with 13¾; Manchester and Bradford, 10; Newcastle-on-Tyne, 8¼; Liverpool, Glasgow, and Salford, 8; and Edinburgh, 6½. London, as represented by the Metropolitan Board of Works, covers an area of 118 square miles, whilst the Police authority extends over 610 square miles.

TABLE showing the Parliamentary Divisions of the Metropolis, with rateable value and Income Tax returns.

No.	Population.	Parliamentary Divison of the Metropolis.	Rateable Value 1881.	Profits charged under Schedule D.
1.	261,061	City of London .	3,535,494	£39,263,424
2.	498,311	Marylebone . .		11,744,016
3.	228,932	Westminster . .		9,476,160
4.	524,480	Finsbury . .		6,979,056
5.	221,866	Southwark . .		4,543,776
6.	498,967	Lambeth . .	23,869,994	2,896,512
7.	438,910	Tower Hamlets .		2,563,152
8.	366,516	Chelsea . . .		1,509,792
9.	417,191	Hackney . .		1,370,688
10.	206,651	Greenwich . .		741,792
			* £27,405,488	
			Total .	£81,088,368

The Tables above are taken from authentic sources. No better evidence of the wealth of London in comparison with the principal cities and towns of England can be adduced. Many of the several towns named have carried out important improvements, they possess their own water and gas works, and markets, having invested very considerable sums for that purpose for the benefit of the ratepayers, on the security of the rates. The liabilities of

* Estimated for 1885 to be £28,901,041.

some of these towns are very high when compared with those of the Metropolis.

The Metropolitan Improvement Rate is levied on the whole of London by the Metropolitan Board of Works, and collected through the various Vestries and District Boards. Fortunately for London it has a rich Corporation, which is in the habit of acting somewhat liberally with its private funds in promoting and carrying out extensive metropolitan improvements; but for this fact the metropolitan ratepayers would be much more heavily taxed. For the most part, however, the various metropolitan improvements are under the control of the Metroplitan Board of Works, which was constituted in 1855 in the place of the numerous Paving, Trusts, and Improvement Commissioners then existing. The rate commenced in 1856 at 2*d.* in the £, and now averages 6½*d.* The proportion of the Metropolitan Board of Works consolidated rate compared with the total average rate of the metropolis as explained by the following half-yearly demand note issued by the St. Pancras Vestry, considering what it represents, is by no means excessive. This is about the average rate throughout the various Parishes and Districts of London, but the rate varies in the several Districts. This inequality will doubtless soon be adjusted. It is manifestly unfair that the poorer Districts should have to pay the total cost of local improvements, as is now the case, when they are in many instances of metropolitan importance.

STATEMENT FOR RATE FOR THE HALF-YEAR ENDING LADY DAY, 1884.

Poor Rate, 14d. in the £.

	Approximate Amounts in the £.	s.	d.
* Rate for the Relief of the Poor.	10*d.*	1	2
* County Rate	1*d.*		
* Metropolitan Police Rate .	2¾*d.*		
Rate for preparing Borough and County Lists of Voters, Jury List, and for General Expenses of Directors and Overseers	¼*d.*		

Lighting Rate, 1d. in the £.

Rate for the Expenses of Maintaining and Lighting the Public Street Lamps . .	1*d.*		1

* *Metropolitan Board of Works Rate, 3d. in the £. Consolidated Rate.*

Main Drainage	½*d.*		
Fire Brigade	½*d.*		
Rate for freeing the Bridges over the Thames from Toll .	½*d.*		
General Expenses of the Board	1½*d.*		3½
Sewers Rate, ½d. in the £.			
Rate for the Repair and Construction of Sewers . .	½*d.*		

Carried forward 1*s.* 6½*d.*

Brought forward		1*s.* 6½*d.*
General Rate, 9d. in the £.		
Rate for Paving, Watering, and Cleansing Streets, Removal of Refuse, &c. . . .	4½*d.*	
* Rate for the School Board for London	3½*d.*	
Rate for the General Expenses of the Vestry, *i.e.*, Salaries, Sanitary Expenses, Law and Parliamentary Costs, Printing and Stationery, Public Gardens, &c. . . .	1*d*	9½
For payment of Interest on the Bond Debts of extinct Paving Trusts	½*d.*	
Total for the half year .		2 4

The above is the usual form of most of the local tax papers. It sets out the proportions of the rate collected, and how the rate is disbursed.

The Vestries have no control over the sums marked with an asterisk, which are collected and paid over by them to the various authorities on their several precepts. In St. Pancras, for instance, these several amounts during the first half of this year were as follows:—

*	Rate for the Relief of the Poor . .	£59,000
*	„ Police	15,907
*	„ County	6,200
*	„ Metropolitan Board .	19,354
*	„ School Board . .	21,030
Total over which the Vestry have no control		£121,491

In 1881 this one parish had a population of 236,209, or

* A sevenfold increase within 80 years.

about one-fifteenth of the metropolis. It had 24,701 inhabited houses and 23,690 householders. Its rateable value was £1,470,627.

The average annual rate in London from 1876 to 1882 was 5*s*, $0\frac{2}{10}$*d*. in the £. This included $6\frac{2}{10}$*d*. Metropolitan Board of Works Rate, and and $5\frac{9}{10}$*d*. School Board Rate.

The increase of the rateable value of the Metropolis is advancing by rapid strides, the increase of the rateable value of the City and Liberties alone is as follows:—

1801	507,372
1831	792,904
1861	1,279,887
1871	2,186,487
1881 *	3,535,494

In 1811 the City possessed 17,413 inhabited houses at an average rental of £32 9*s*. per annum. In 1861 the number of houses had decreased to 13,431; but the rental in 1811 of £565,243 had increased to £2,109,935 per annum. A less number of buildings, but much larger, have been erected in the place of those removed. To capitalize the rental of 1811 at 4 per cent. would have produced a sum of £14,131,075, whilst to capitalize the rent of 1861 at the same rate would have produced £52,781,375, and in 1881 £98,993,832.

To confirm the fiscal pre-eminence of London it may be mentioned that the Customs duties paid in London in 1864 exceeded by £484,611 those paid in all the other ports of the United Kingdom, and had paid on an average of the nine years then past £331,149 more, yearly.

In order to ascertain the fiscal power of the Metropolis to carry out improvements, Tables are annexed showing the increase of the rateable value of the Metropolis, and the of its liabilities at the present time, and the cost to the ratepayers per annum for what they already possess in the shape

* A sevenfold increase within 80 years.

powers of the Metropolitan Board of Works, the extent of improvements, together with an approximate estimation of the cost of the improvements suggested in this essay.

RATING OF METROPOLIS BY THE METROPOLITAN BOARD OF WORKS DURING ITS EXISTENCE.

Year.	Rateable Annual Value, as defined by Metropolis Management Act of 1855, after allowing exemptions.	Approximate current Expenditure defrayed by Rate.	Rate in Pound levied by Board.
	£	£	d.
1856	11,283,663	—	2·09
1857	11,290,869	—	1·86
1858	12,031,151	—	2·13
1859	12,045,476	—	4·30
1860	12,057,455	—	5·38
1861	12,450,416	—	5·32
1862	12,514,053	—	5·20
1863	12,569,969	—	5·53
1864	12,588,661	—	6·12
1865	14,419,823	—	5·22
1866	14,524,542	—	6·32
1867	15,261,999	—	6·99
1868	16,196,547	442,292	6·09
1869	16,257,643	427,399	6·04
1870	18,719,237	288,196	5·10
1871	18,683,288	285,431	3·31
1872	19,971,281	291,091	2·68
1873	20,287,709	290,932	2·74
1874	20,549,011	364,335	4·42
1875	20,886,946	466,228	5·26
1876	23,111,313	446,595	4·60
1877	23,136,819	464,210	4·82
1878	23,469,970	476,562	4·88
1879	23,960,109	572,555	5·82
1880	24,501,410	636,366	6·32
1881	27,405,488	669,306	5·89
1882	27,386,086	716,519	6·24
1883	27,883,078	735,470	6·23
1884	28,415,764 (Estimated.)	772,410	6·50 (Estimated.)
1885	28,911,041	722,776	6·50

The Metropolitan Board of Works since its existence has incurred a total liability for various Improvements and Loans to Local Authorities to the extent of . .	£31,681,294	4	6
Of this has been paid off . . .	9,363,139	11	8
Reducing the liability to . . .	22,318,154	12	10
After allowing for Assets of Advances made, value of property to the extent of	7,954,812	17	3
	14,363,341	15	7
A further liability to redeem Stock of Leases, a net liability to 31st December, 1883, of . . .	470,330	7	11
Net Liability of the Board .	£14,833,672	3	6

The total charge for interest and redemption of the Board's capital per annum is .	£1,138,980
Towards which the Coal and Wine duties,* the interest receivable from Local Authorities, and the rents of lands and premises on the various lines of Improvements, not yet disposed of, amount to . . .	588,474
Net charge of Debt on Rates . . . . (equivalent to a charge on the Rates of 4·57*d.* in the pound.)	£550,506
The net charge of Debt on Rates in 1883 *was* . *or* 4·60*d. in the pound.*	£535,185

* The Coal, Corn, and Wine duties levied by the Corporation, amount to 1*s.* 1*d.* in the £, of which 9*d.* is appropriated by the Metropolitan Board of Works, and from which revenue the Thames Embankments have been chiefly constructed, whilst the other 4*d.* is

For every £1,000,000 by which the debt is increased, the additional charge on the rates is 0·42*d.* in the pound, unless counterbalanced by an increase of the rateable annual value.

The estimated rate to cover both interest and repayments of the Board's liability is 6·50*d.* Considering the magnitude of the operations of the Board, and the important improvements already effected, this rate cannot be deemed extravagant.

As to London being able, with so high a rateable value, to carry out a bold and comprehensive scheme, such as the foregoing, there is no question. The annual cost of the same would incur an addition to the present rate of more than about 4¼*d.* in the £ for a period of 30 years.

Fourpence farthing in the £ on the estimated rateable value for 1885 will produce £511,966, which would be the amount required to pay interest and annual redemption on the £10,000,000 capital if borrowed at 3 per cent. per annum, the usual borrowing rate of interest at which the Metropolitan Board of Works have obtained their requirements since 1880.

This Estimate—which is apart from the construction of the New Bridge and approaches thereto, the whole cost of which will, in all probability, be borne by the Corporation—is based on the annual rateable value for 1885, of £28,911,041, and on the expectation of a large proportional recoupment, and consequent increase in the assessment value. The longer every improvement is delayed the greater will be the cost. The many advantages to the metropolis, with such an improved condition of its thoroughfares, would amply compensate for the, comparatively speaking, slight addition to the present taxation.

expended by the Corporation, and is in part represented by the Holborn Viaduct Improvement, the cost of which is gradually being paid for from the same source.

SUBWAY CROSSINGS.

At all important centres, such as the Mansion House and Bank intersection, King William Street by the statue, Gracechurch Street by Lombard Street and Fenchurch Street; Gracechurch Street by Cornhill and Leadenhall Street; Mansion House Station; Cheapside by St. Paul's and the Post Office; Ludgate Circus; Waterloo Place; Strand; and at other important centres and intersections of streets, attractive subway crossings should be provided to enable pedestrians to cross from side to side more easily, which would at the same time materially expedite and facilitate the traffic, and so prevent the present difficulty and extreme danger, at times, of crossing. The subways should be faced internally with white glazed bricks and lighted from the sky overhead where practicable, and lighted artificially with gas or electricity. At the Mansion House and Bank there should be in the centre of the intersection opposite Princes Street a circular chamber 20-ft. in diameter, with a 10-ft. circular light from the street overhead, around which light, at the top, extending to the 20-ft. circle, should be rests or refuges protected by kerb and posts for persons crossing at the street level. Below, from this centre, should radiate several corridors to the corners of the various streets, say to the Wellington Statue in front of the Exchange; to the Bank corner; also to the Union Bank corner; to the Mansion House and to Cornhill by Lombard Street, and it may be desirable to have one to Mappin and Webb's corner, and thence across to the Safe Deposit to take the traffic from Walbrook and that side of Queen Victoria Street. At all these points there should be steps, communicating, by corridors, to the central chamber in straight lines so as to admit of the same all being easily controlled from the centre, and against the walls there

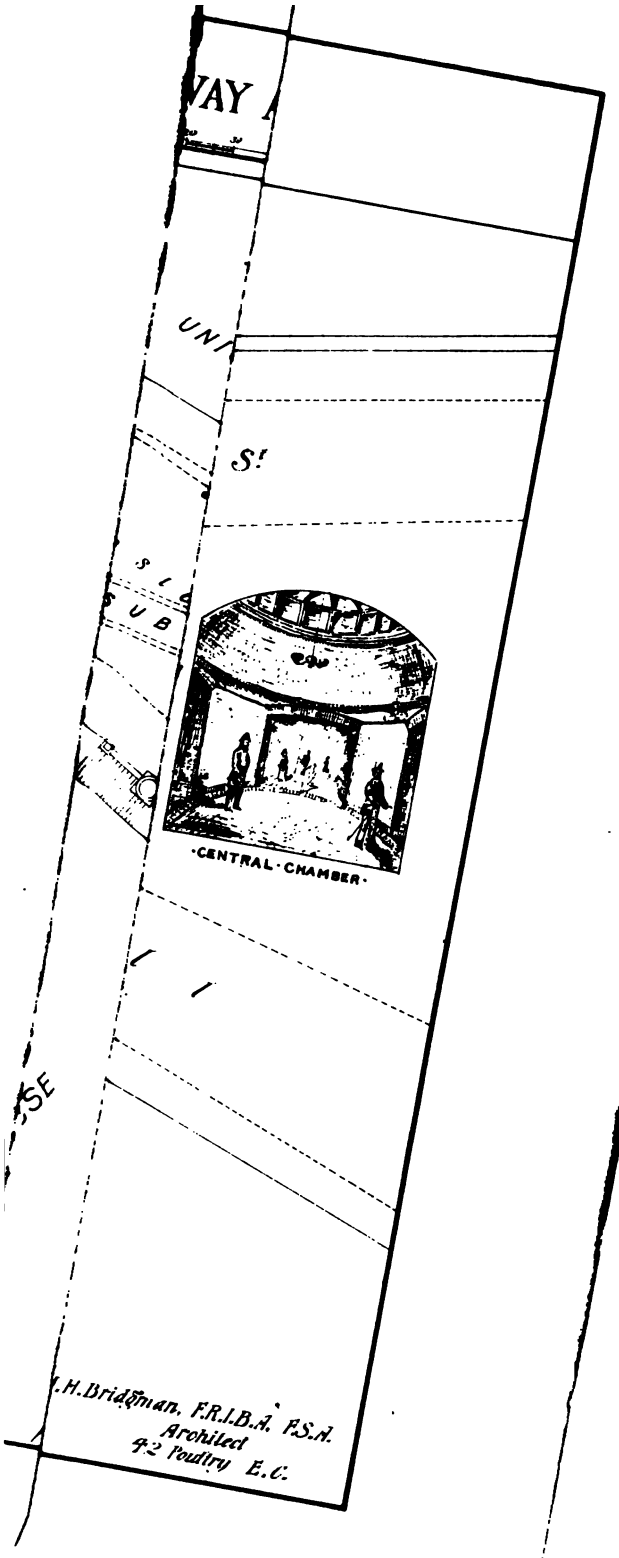
should be affixed a tablet indicating where each corridor led to. A pendent light (electric if possible) in the central chamber and gas brackets against the walls, with strong reflectors at the ends, would give ample light to the same. There is no practicable difficulty in the way of the staircases, as these could be obtained within the line of kerb, as shewn by the plan, if the footways were gradually widened at the several corners sufficiently to admit the same without reducing the ordinary width of footway.

TELEGRAPH SUBWAYS.

In the formation of new streets spacious subways should in all cases be made for the reception not only of all main sewers and gas and water pipes, but special provision should be made for all electric apparatus, telegraph and telephone wires, pneumatic tubes, hydraulic power, &c. If all of the foregoing were provided for in this way the great difficulty attending these matters at the present time would be considerably lessened, and by degrees the whole of the present overhead system of wires could be changed into a subterranean one, thus avoiding the very great inconvenience, not to say danger, of the present unsatisfactory and dangerous arrangement.

THAMES NAVIGATION.

It is a surprising fact that the River Thames is not utilized, in a far greater degree than it now is, for locomotion from one part of London to another, not only for persons moving about London—in much finer steamboats than those now in use on the river—but for general trading, on specially made steam-barges, either up or down or across the river. One ventures to think, if this subject were to receive the attention it deserves, with adequate respect-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Architect
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able steamboats and barges, with the necessary approaches formed from the river, a very large and profitable enterprise might be carried on in so large and rapidly increasing a city as London, where upwards of 80,000 are added, annually, to the number of its inhabitants.

GATES AND BARS.

The various gates and bars shutting off direct communication between one part of the Metropolis and the other—necessitating circuitous routes in consequence, incurring both expense and delay, and sometimes great annoyance—should be abolished, so that the full right to every street in the metropolis might be exercised by the ratepayers, by whom the cost is paid of maintaining, cleansing, and lighting the same. The numerous streets and squares where these gates and bars are now located should be thrown open to the public. It is manifestly unfair that the present state of things should be allowed to continue.

WAREHOUSING.

It would be a decided improvement if, in all cases, warehouses were prevented from unloading heavy goods with cranes which would interfere with pedestrian traffic after a certain hour in the morning, say nine o'clock, unless provision were made whereby all such goods so unloaded after that hour might be lifted direct to the first-floor level, and then lowered to the basement, inside, if so required. In such cases a screen or shield of hard wood or metal might be provided overhead, projecting from the front sufficiently high to protect passers by on the footpath. These shields might run out horizontally on rollers from the first-floor level, and could be supported on the kerb by small portable iron

posts. The present system not only materially inconveniences the footway traffic but is highly dangerous. All day in some thoroughfares huge packages, &c., are dangling overhead, whilst passers by are continually falling over insufficiently-guarded open-pavement traps, or into the areas whilst unloading is going on. It is, however, a difficult matter to deal with, particularly as the custom has so long prevailed of entirely monopolizing the footway, just when an inclination is felt to do so, to the great annoyance and inconvenience of pedestrians.

SANITATION.

There is not one of the foregoing improvements named, which, if carried out, would not be accompanied by great sanitary gain, not merely from the advantage of providing more breathing space and ventilation to London generally, but by opening up and improving some localities which are now a discredit to the Metropolis, more particularly in the cases of Seven Dials; Clare Market; Fetter Lane; Clerkenwell; and Middlesex Street; Whitechapel; also in Bermondsey and Blackfriars. In all metropolitan improvements the question of health should be an element of paramount consideration.

SUBSOIL.

Where the new or improved lines of streets pass through churchyards or old burial grounds, the subsoil should not be disturbed, but a surface layer two feet thick of Portland cement concrete should be laid over the entire area. Where, however, the sewers or subways pass through the same, the subsoil of the subways should be removed, and concrete walls and floors of concrete, as before described, should be formed to the required depth, as a lining to the same two feet thick in all cases, the walls to reach up to the surface;

by this means no part of such burial ground would have a less thickness of concrete over and around the entire area of the ground interfered with, than two feet.

NEW SEWERS AND DRAINAGE.

The fact that there would be new and spacious sewers constructed under every new line of street, advantage would, no doubt, be taken to connect all existing contiguous sewers and drains to them, thus providing a ready means of rapidly discharging and carrying away of all house and surface drainage, in the place of the present lengthy, tortuous, small, inefficient, and sluggish drains which have to do very important service, and for which they are in no wise fitted. Every house, too, should have an effectual mode of drain ventilation, *i.e.*, of preventing the sewer gas entering within the buildings, and the drainage system of every separate house would be provided with a free circulation of fresh air throughout.

SEWER VENTILATION.

In carrying out any important improvement, means should be taken to efficiently ventilate the sewers, by erecting at certain points on the surplus ground, to be retained or obtained for the purpose, tall chimneys, with strong furnace blasts, and tall chimney stacks adapted to draw off the deleterious gases escaping from the sewers, in place of the present very objectionable system of street ventilators. These are now so placed as to be immediately under people's noses as they pass along the streets, and *the impure air* in ascending cannot fail to enter the windows and vitiate the atmosphere of rooms to a large extent—a most unsatisfactory and unwholesome system which a few

years hence, when the present rapid progress of science in sanitary matters shall have reached a more advanced stage, will be simply remembered as a relic of barbarism.

LEVELS AND GRADIENTS

All the new lines of streets have the levels marked on them, very few of them have steep gradients, and those are chiefly of short lengths. It has only been deemed desirable to alter the levels in so far as that may be necessary to obtain the best gradients.

CONCLUSION.

One can scarcely write an Essay on so important a subject without, at least, referring to Sir CHRISTOPHER WREN and others who have left on record their views of improving London. In regard to Sir CHRISTOPHER WREN'S design for reconstructing London, it must be said that it could only have been carried out at one particular time in the history of London—viz., at the time he proposed it, after the Fire of London. A similar opportunity, however, one hopes, will never occur again. London was rebuilt on much the same lines as previously existed, and any improvements of importance now to be effected—and many a scheme for a single street here and there has been proposed, but no such comprehensive idea as that promulgated by Mr. WESTGARTH —could only be carried out, in Central London, without paying special regard to the present arrangement of streets, particularly in the City portion of Central London. A bold scheme may be, however, contrived without slashing heedlessly through invaluable properties with the simple idea of getting a straight line, or a certain effect. Indeed, straight lines are not so much needed as a series of streets that will materially aid the existing streets, laid out in such manner

as to intersect them and intercept the traffic at important centres. This has been the aim and object of this Essay, and the Author ventures to hope that he may have succeeded after much consideration, in devising a scheme, which, to a very great degree, if carried out, would free London from its present straitness and incubus, in regard to facilities for locomotion, for a very long time to come, and give it an opportunity of moving freely, of expanding to any extent, and of advancing rapidly in prosperity—even by leaps and bounds—if that be a condition of things devoutly to be wished.

What is needed, in the Author's humble opinion in the first place, is an agreement, or an approach to an agreement, by the principal recognized Authorities of the Metropolis, on some general and systematic scheme for the future improvements of London, to be dealt with as a whole or in parts as opportunity occurs. These should be planned on the broadest and most comprehensive scale. Numerous instances could be advanced, where, had such a scheme been laid down, the serious mistakes of allowing important sites to be rebuilt over, which must inevitably, a few years hence, be purchased for Metropolitan improvements at three or four times the present value, would never have occurred. In one case the value had increased five fold in a very brief period. Whether any improved system of Government for the Metropolis would be able, wholly, to remedy the present condition of things is a problem to be solved; but that some Authority with full powers to deal with such important matters as the future improvements of London, with a fully matured plan to work upon, is urgently needed, is beyond all question.

December, 1884.

ON THE RE-HOUSING

OF THE

POORER CLASSES OF CENTRAL LONDON.

BY J. CORBETT.

ON THE RE-HOUSING

OF THE

POORER CLASSES OF CENTRAL LONDON.

INTRODUCTION.

IN response to the very liberal invitation which Mr. William Westgarth has enabled the Society of Arts to make, the writer respectfully submits this essay, with its illustrative drawings, as the result of nearly thirty years' observation and practical connection with the housing of the poorer classes in one of the largest cities in England; and of visiting many of the old "slums," the modern streets, and the model dwellings of several towns in England and Scotland. As the best means are not always in accordance with existing municipal or imperial regulations affecting buildings, the writer makes no attempt in this paper to submit to the many hard, and in some points unreasonable and injurious regulations now in force in London.

PRESENT OPPORTUNITY FOR IMPROVEMENTS.

1. Thanks to the rapid progress of national education in the widest sense of the term, the difficulties formerly arising from the miserable ignorance and apathy of the poorer classes are rapidly passing away; and now that third-class railway carriages are cushioned, and picture galleries opened freely to the masses, without receiving any damage, it is safe and practicable to provide in even the smallest dwellings various fittings, promoting health, economy, and comfort, which some years ago would not have been duly appreciated, or even tolerated, by the poorer classes.

ISOLATED HOMES.

2. Though much economy might result from some system of "associated homes," yet the personal independence, the family privacy and purity, and the gratification of deeply-rooted national prejudices, resulting from maintaining complete isolation in each home, quite forbid the idea of association, except for reading-rooms, children's playrooms, or other such purposes, as proposed in Clause 8. (Means of economic private cookery, &c., by association are suggested in Clause 29.)

LIMITED COMPANIES *v.* PUBLIC TRUSTS.

3. The capital required for this work could be best provided, and the whole business managed, by a Limited Liability Company, like the Improved Industrial Dwellings Company, which has already done so much similar work in London, with such beneficial and altogether satisfactory results. Experience has now definitely proved that such

Companies provide and maintain healthy dwellings at about half of the excessive outlay of many Public Trusts, such as the Peabody Trustees, and the trustees of nearly all almshouses. The desire of these trustees to have not only reasonable accommodation and comforts in their dwellings, but to have the best of everything, and needless massiveness in construction, seems to have quite overpowered considerations of economy and remunerative returns.

The Public Loans available to meet one half of a Building Company's expenditure on Artisans' Dwellings, at the price of about 4 per cent., might now be reasonably modified by lending the money at about 3 per cent., as this price is higher than the present price of Consols, and therefore no loss would result to the Government, while great gain would result to the poorer classes by the consequent reduction of ther rentals by about one-tenth. After repaying the Government Loan of half the capital, the remainder might best be treated as a fixed permanent investment, as any arrangement for recouping it, and eventually freeing the dwellings from rental, would cause a needless addition to the current rents.

The tenants might be permitted to lease their dwellings at slightly reduced rentals; but no dwelling should be sold to a tenant, it being essential to the due control of each block that its ownership remain intact with the Building Company.

Rows of Dwellings in Blocks.

4. Passing by the problems connected with the demolition of existing premises and the suitable re-alignment of new main streets, which appear to belong rather to other departments than to this, the next consideration is the

best general arrangement for large numbers of new buildings for the poorer classes.

Dwellings in flats of from four to seven storeys in height, built in straight rows with only slight projections or indentations, so as to induce free play of wind and sunlight on almost every part of the structure, are the most economical of space, and much more healthy than buildings in lofty squares, into which wind and sunlight cannot freely play.

The stairs and landings for access to the upper flats can be most conveniently and economically arranged as shown on the plans—a separate staircase to each pair of dwellings on a flat. This gives more privacy, and promotes cleanliness better than the system of large staircases and long corridors.

Use of Valuable Sites.

5. On valuable sites where there is a demand for ground floor and basement space for shops, warehouses, &c., the building site for the dwellings should be formed at the nominal first-floor level by a strong floor of brick arching on brick pillars, avoiding any iron girders or columns so as to be practically fire-proof, as indicated in the Sectional Drawing No. 7, showing a shop with warehouse in the rear, a basement and sub-basement, a front street 20 yards wide, and back street 15 yards wide; large chimney stacks from the sub-basements passing up through the dwellings at every 30 yards distance. Over the front shop is a pathway 4 yards wide giving access to the dwellings, and over the warehouse back is another pathway 3 yards wide for access to the dust-bins, water-pipes, &c., serving the dwellings. These raised pathways should be approached by wide stone stairs from the main streets, and also by lifts worked by power, available for moving loaded handcarts, furniture, &c., to or from the pathways.

USE OF CHEAP SITES.

6. On sites suitable only for the use of the poorer classes, the blocks of dwellings in flats might best be placed at the usual street level, without basements, as shown in Sectional Drawing No. 6; or as also there shown with a flat roof to form a playground or clothes drying-ground, and a basement for use as workshops and traders' stores in connection with the dwellings. The front street 18 yards wide, and having its central 10 yards width formed into a garden wherever absence of through traffic would permit. The back street 14 yards wide, with its central 6 yards width occupied to one storey height by stables and workshops with intervening spaces; the cart roads on each side of these streets being only one track wide, and the traffic permitted only in one direction. The proposed flat roofs might have garden borders around them, while retaining the central spaces as playgrounds and clothes drying grounds. These and the proposed gardens in front streets would be for common use and enjoyment of the tenants.

ADJACENT STABLES.

7. Refined sanitary objections to the contiguity of stables to dwellings must give way to the pressing business needs of the poorer classes of hawkers, carters, cabmen, and others requiring horses or asses for their business: just as such sanitary objections are overlooked by the wealthy occupants of West-end mansions, who, for mere convenience, without any hard necessity, often choose to have their stables actually built into their dwellings.

COMMON ROOMS FOR TENANTS.

8. Each large block of dwellings, or group of small blocks, containing together (say) 200 dwellings, should have a room provided for constant varied use as a reading-room, play-room, lecture or music-room, as occasion might require, capable of seating (say) 300 persons.

A small adjoining room should serve as library, committee-room, ante-room, &c., and immediately adjoining should be the dwelling of the Resident Agent in charge of the block of dwellings. This agent would be not only rent collector and care-taker, seeing to repairs, &c., but would also be librarian, custodian of common room, and organizing secretary of a tenants' committee for lectures, entertainments, co-operative purchases, &c.

In some cases a co-operative store might be incoporated with each large block.

BUILDING MATERIALS.

9. The sanitary considerations ruling the choice and disposition of materials used in the constructing the dwellings will be chiefly the following:—

WALLS.

10. The walls should be of hard, impervious, durable materials, such as well-burnt bricks set in mortar formed of one part of good lime to three parts of ground cinders, well mixed in a mill; or concrete formed of one part of good Portland cement to eight parts of clean ballast and sharp sand or ground cinders (this 1 of cement to 8 of ballast, &c., is enough when the cement is good, seeing that 1 to 10 and even 1 to 13 has been used for harbour walls subject to heavy seas).

All external walls should be protected from the chief weight of rainfall by overhanging eaves and projecting string courses. All walls should be protected from ground damp and the splash from footpaths, by damp courses of asphalte below the level of their ground floors. Cavity walls are not advisable, from their harbouring rats and forming objectionable air channels from house to house.

ROOFS.

11. The sloping roofs should be of good Welsh slates partly bedded in mortar, laid on ¾-inch deal boards, carried on purlins without any spars or roof framing, thus forming a very strong, durable, and simple roof.

FLAT ROOFS.

12. The flat roofs should be formed of Portland cement concrete, as described for the walls, covered with asphalte ¾-inch thick in two coats, formed of a mixture of gas-tar and sand laid on hot; the surface covered with grey floor tiles, bedded into the asphalte while hot, protecting it from the sun's heat and from injury by treading on it, &c.

HOUSE FLOORS AND CEILINGS.

13. The floors and ceilings of the dwellings have many conflicting requirements: warmth, waterproofness, fire-resistance, non-harbouring of vermin, strength, lightness, cheapness; and as these requirements are not fully met by any concrete flooring, and not half met by ordinary boarded flooring and plaster ceiling, it would be best to apply a modification of the thick plank flooring so much used for warehouses.

As each room in these small dwellings would be of moderate size, seldom exceeding 150 square feet, the floors might each be completely prepared in the workshop by truly squaring the 3-inch, $3\frac{1}{2}$-inch, or 4-inch planks to be used for the several widths of room, inserting iron tongues in close-fitting grooves between the planks: fixing them edge to edge by 1-inch iron bolts, driven through close-fitting holes laterally through the planks, and reaching across the whole floor, so as to bolt it into one firm slab; the top and under surfaces being perfectly planed, a small skirting or water-ledge nailed round the wall-side edges, and the finished floor eventually lifted by a jib crane on the building, and set down on over-sailing courses in the walls, duly prepared to receive it, the chink between floor and wall being flushed with cement. In some cases the larger floors might be made in two pieces for easier handling, and joined together by an under plank and strong screws. This form of floor and ceiling seems to meet the before-mentioned requirements completely, and to be in every way suitable for the purpose.

The ceilings below slated roofs would be of lath and plaster, as usual; and those under concrete and asphalte flat roofs would be of plaster.

PASSAGE, &c., FLOORS.

14. The floors of passages, closets, sculleries, and house yards should be of cement concrete as described, finished with 1-inch thickness of two parts Portland cement to three parts of ground spar, finished to a hard smooth surface, slightly sloped to lead any water out by the doorways, &c.

STAIRS.

15. The staircases would be best of solid stone of hard quality, or else of cement concrete as above described for floors.

SMOKE FLUES.

16. The smoke flues for these small dwellings should be proportionately smaller than the size of 14 inches by 9 inches commonly used for the largest houses; and as 9 inches by 7 inches gives special facilities for well bonding the brick walls by quarter-brick bond, this size should be used throughout; and as no wall plugs would be required near the flues, half-brick walls round them would be sufficient.

HEARTHS.

17. The hearths would be supported on cast iron plates with turned-up edges forming fixed fenders, the hearth surface formed of tiles bedded on concrete: the lower surface of the casting would form part of the ceiling below, a projecting flange carrying the surrounding plank flooring.

DOOR AND WINDOW CASINGS.

18. As an important means of avoiding chinks liable to harbour vermin, the door casings should be formed of cement, like skirtings often are, the door hinges being entirely let into the door styles and screwed through the cement into wood plates about $\frac{3}{4}$ inch thick built into the walls; the lock plates fixed in the same way. Similar cement frames should be used for all the flat casement windows.

DOORS.

19. The doors to the dwelling-rooms should all be panelled (to suit popular taste) with $1\frac{3}{4}$-inch frames, solid moulded, to check destructive mischief. The inferior doors should be framed and filled in; ledged doors being too liable to damage.

WINDOWS.

20. The flat windows should all be casements, the many advantages of sashes being more than balanced by their liability to damage and by their sash casings harbouring vermin; the windows should each be divided into three casements, one at the upper part hung by its top edge, and opening outwards so as to keep off rain, and a pair of casements below also opening outwards.

BAY WINDOWS.

21. The small bay windows should be similarly arranged, with solid red deal frames and sills and with cupboards under their window bottoms.

The bay roofs should be of cast iron, similar in arrangement to the cast iron hearths already described, and built into the walls. These roofs would form balconies for flower pots. &c., for the flat windows over them.

FIXTURES.

22. All washing sinks, waste pipes, shelves, and other available fixtures should be of cast iron, protected from rust by the Bower-Barff process, and painted with silicate paint. This material is cheap, durable, and not easily damaged; and it cannot, like wooden fittings, be misued to light fires.

DUST SHOOTS.

23. Each set of dwellings has a dust shoot with an inlet shoot and iron flap in each w.c. on the upper floors of Plans Nos. 1, 2, and 3.

A dust bin would be formed over the ground floor w.c.'s, with an outlet door at a height to deliver into a cart. A small dust tub would be provided for each ground floor dwelling.

Plans 4 and 5 have a similar arrangement.

WATER CLOSETS.

24. The water closets should all be of the "wash-out" type, flushed by a pipe from a cistern serving all the closets in one stack, each closet having a regulator valve, operated by moving its door to and fro.

The closet pans should be of enamelled cast iron, compietely encased in cement concrete, so as to resist any rough usage.

SOIL PIPES.

25. The soil pipes of heavy cast iron pipe, 5 inches diameter, rust jointed, with 4-inch branches to each closet; each longer branch of a pair to be connected with a 4-inch similar cast iron vent pipe, both soil pipe and vent pipe open at the top above the roof.

DISCONNECTING TRAPS.

26. Each large block of dwellings to have its soil pipes disconnected from the public sewers by a manhole with a syphon trap, or, where more convenient, each soil pipe and vent pipe to be together disconnected from the sewers by a syphon trap.

WATER SUPPLY.

27. Each dwelling should have a water tap over its washing sink, supplied from a slate cistern within the roof; this cistern carefully protected from impurities and from frost, and with a ball-tap from the water main. The size of cistern would depend on whether constant or intermittent supply was provided in the mains, but it should provide at least 100 gallons per dwelling per day.

GAS SUPPLY.

28. Each dwelling should have a gas supply through a meter: one large ordinary jet and strong bracket being arranged to turn into the oven; very small jets securely fixed into fixed brackets for the bedrooms and sculleries, and a jet of full size and superior quality near the window of each dwelling-room, on a neat fixed bracket.

STEAM OVENS.

29. A most important means of economising fuel, saving time, and providing unprecedented facilities for cheap and good cookery, hot water supply, warming of the dwelling, disinfection of clothing, and destruction of parasites, &c., should be provided in each of the dwellings by means of a steam oven.

This oven would be in form and appearance like an ordinary cast iron oven, about 14 inches cube inside, with an ordinary iron door, but this 14-inch cube would be encased in a 15-inch cube on all but its front side, the annular space being filled with superheated steam from a boiler at (say) 20lbs. pressure per inch, so as to maintain

a temperature higher than boiling-point within the oven. A 1-inch vent pipe would be led from the oven into the smoke flue.

Small wrought iron pipes would be fixed throughout each block of dwellings supplying steam by (say) a ½-inch pipe with a ⅛-inch thimble into each oven casing, these thimbles safely limiting the escape of steam if an oven got broken.

The condensed and spent steam would be returned by somewhat smaller pipes to the boiler, and so a constant circulation would be maintained without waste of heat or of water, the pipes being encased in slag wool within light cast iron casings against the walls, and the ovens being encased in slag wool within recesses in the walls.

One steam boiler of adequate size might serve several contiguous blocks, just as high-pressure steam for power and for heating is now supplied in some American cities; and either by engaging a night watchman to act also as stoker, or by having a special boiler furnace with self-feeding hopper, &c., to work for ten or twelve hours without attention, steam could be maintained night and day.

By means of these steam ovens each tenant would have a considerable modicum of heat always available, yet so limited as to prevent any possible waste.

The following domestic uses of the steam oven might be made:—On rising early in the morning a hot breakfast could be prepared without waiting to light a fire. A can of water could be heated for washing the pots, the floor, &c. On washing days the clothes could be boiled and presently aired or dried. Dinner might be completely cooked with ample variety, including boiling or stewing, and baking of puddings, cakes, or bread; these last only requiring a finishing browning, which would be effected, as would the roasting of meat, &c., by lighting the above-

mentioned large gas jet to supplement the steam heating of the oven. The room might be sufficiently warmed during cool evening by openings the oven door, and thus letting hot air circulate into the room. Tea or coffee could be most perfectly prepared, Hot water for an evening bath for either children or parents might be provided; the scullery or a bedroom being used as bath-room. Infected or unduly inhabited clothes might be purified without risk of burning them.

All these advantages might be provided at half the cost now expended in fuel, by the well-known economy of having one large fire properly used in a furnace, instead of many small fires wastefully used in open grates, which also involve much dirty work and waste of time. Domestic fires being thus almost superseded, the smoke nuisance would be reduced to a minimum, and thus cleanliness, culture of gardens, enjoyment of the open air, and many other advantages would be secured.

If good heating gas could be obtained at a low price, it might be well to simplify the ovens by omitting the steam arrangements and using gas only; but in most cases the cheapness of steam heating, and its definite moderate temperature, would make it well worth providing.

Room Fireplaces.

30. The most suitable dwelling-room fire places for these dwellings provided with steam ovens, would be compact open grates, with fixed bars projecting in front of the usual bottom bar, so as to form a hob for toasting bacon, pies, &c., all across the grate front.

BEDROOM FIREPLACES.

31. The bedroom fireplaces would be very small "mantelsham" grates, built into narrow openings lined with firebrick, forming the commencements of the 9-inch by 7-inch smoke flues.

VENTILATION.

32. Each room with a smoke flue should have a simple "Sheringham" valve inserted into this flue near the ceiling, so that by opening this vent, the hot spent air from the upper part of the room might find escape by the flue. This top vent would be most beneficial when no fire was alight, and when gas-light was in use; the vent draught could at such times be increased by closing the fireplace opening. The valve could at once be closed whenever contrary winds caused a down-draught, and such hand regulation is much preferable to the inefficient and costly self-regulating valves often used as exits, especially as these valves materially hinder the draught during quiet times, while the open "Sheringham" valve gives free passage to the slightest current of air.

FRESH-AIR INLETS.

33. As to fresh-air inlets, each dwelling-room or bedroom should have a tube of half-brick section that is 4½ in. by 3 in.—led from a grid in its external wall to a dispersing rose of cast iron projecting from the wall over its mantelpiece.

This would gently disperse the fresh cool air into the warm air rising from around the fireplace or the steam oven, and thus imperceptibly spread it throughout the room.

BRICK WALL SURFACES.

34. As to wall surfaces and decoration, the sculleries, closets, landings, &c., should all be of smooth-jointed brickwork, colour washed in dark maroon tint to fully 4 feet high, and with a gray tint above that height; the colour specially well sized to prevent rubbing off. Salt-glazed red bricks might preferably be used to the dado height.

CEMENTED WALLS.

35. All walls of dwelling or bed rooms should be smoothly finished with a thin coat of cement, impervious to insects, &c., and colour-washed in two tints above and below dado height. But popular taste might be gratified by using wall papers wherever found preferable.

CEILING COLOURING.

36. The wooden ceilings, doors, &c., should be painted with three coats of silicate paint in tints harmonious with those on the walls.

PLANS FOR DWELLINGS.

37. The plans for dwellings submitted in connection with this Essay, are all worked out carefully, in pursuance of the various sanitary and structural considerations herein recommended, and also with special reference to the important points of isolation, through ventilation, &c.

Each room is shown of 9 feet clear height, with its window freely exposed to air and sunlight; no dwelling-room or bedroom having its window in a recess or under any balcony.

PLAN NO. 1.

38. Plan No. 1 is the smallest type compatible with all the sanitary and social considerations proposed. Thus each dwelling has its entrance in the open air as completely as that of an ordinary town cottage. Each has its own water-closet in a little open yard; its scullery, with sink and water-tap; its living-room, with widely-opening windows and doors, fireplace, steam oven, cupboard, &c.: and its little bedroom, with a window and fireplace. The inner doors facilitate blow-through ventilation, and constant ventilation is provided for by air inlets and outlets.

At the present low prices of builders' work, these dwellings could be built in large blocks, say of 200 dwellings each, at about £141 per dwelling, estimating them at about 6d. per cubic foot, including all incidental charges. The cost of land, paving and sewering, &c., at £2 per square yard over the whole site, would add about £59 per dwelling; total, £200 each.

The proper rental may be estimated at 4¾ per cent. on this total cost (one-half the capital being borrowed at 4 per cent.), plus one-fourth for rates, water, steam, repairs, &c., plus one-tenth for losses and empties, amounting to nearly 6½ per cent., or £13 per year, equal to 5s. per week per dwelling.

This plan is shown on an enlarged scale in Drawings No. 8.

A reduced modification of No. 1 is also shown, which could be provided for 4s. per week rental; but its rooms are too small for family use.

PLAN NO. 2.

39. The Plan No. 2 is similar to No. 1, but with two bedrooms; this permits of through ventilation of the bedrooms

during the daytime apart from the dwelling-room. A small wardrobe cupboard is also provided between the two bedrooms.

This type would cost for land, &c., £83, and for building £192; total, £275 per dwelling, entailing a rental of 6*s.* 10*d.* per week.

PLAN NO. 3.

40. Plan No. 3 is similar to the former two, but with three bedrooms. This type would cost for land, &c., £95; for building, £220; total, £315 per dwelling, the rental being 7*s.* 11*d.* per week.

PLAN NO. 4.

41. Plan No. 4 is altogether of a smaller and sanitarily and socially inferior type to the former three, but still with sufficient means for living a healthy and respectable life. It is specially intended to meet the wants of the very poorest classes, who can only afford the barest necessaries of decent life.

Each dwelling has one chief room, with its door on an airy landing, a widely-opening window, a fireplace, a steam oven, a washing-sink and water tap, and a small cupboard.

In the smallest type only a bed-recess off the dwelling-room is provided, this being separated off by a hinged door or pair of doors raised 6 inches from the floor, and only 6 feet high, with open space above up to the ceiling, so as to allow free ventilation from the room.

Each bed recess has a blow-through ventilator about 12 inches square through its side or back wall, with a hinged shutter, so as to allow of free through ventilation each day.

Each landing of four dwellings has two water-closets—one for males, one for females, each ventilated and lighted directly from the street, and each approached through a lobby in free air connection with the street by an open space over the low closet ceiling. A urinal is placed in the males' lobby, and a dust shoot in the females'.

Between the closets, &c., is an airway 18 inches wide, spread out on to the landing to disperse the draught through it, and providing with the front staircase openings ample through ventilation to isolate each dwelling from its neighbours.

These dwellings would cost for land about £26, for building £78, total £104 each dwelling, incurring 2*s.* 7*d.* per week rental. (The land value is estimated apart from the business use and value indicated in the Sectional Drawing No. 7.)

PLAN NO. 5.

42. A modified plan is also shown, with a bedroom added to the above-described dwelling. This would raise the cost per dwelling to £156, and the rental to 3*s.* 10*d.*

These two types, like the previous three types, might be erected alternately in one block to suit the varied needs of tenants. The extra rooms might sometimes be let off to lodgers, or else used as workrooms for sewing, carving, modelling, and other inoffensive trades or for storage of dry goods to be hawked or otherwise sold.

COMMON LAUNDRIES.

43. In Drawings Nos. 6 and 7 arrangements are shown for small laundries on a flat roof over the whole block, each laundry to be appropriated to the ten dwellings on the staircase below it, so that each couple of dwellings might

use the laundry one day in the week. The same arrangement could be more beneficially added to the smallest dwellings, shown in Plan No. 4, as they have no sculleries, and so their tenants might wish to use detached laundries; but for the three first proposed plans the writer thinks that with a scullery and a steam oven, to heat water and dry clothes, "dirty linen would be best washed at home," thereby avoiding publicity and the quarrelling often occurring at such laundries when in joint use.

Use of Flat Roofs.

44. The flat roof would form a good playground for children in places where the streets were too much used for traffic to permit play in them; and clothes might then be dried over the flat roofs.

Drying Frames.

45. Each dwelling of the first three types would have a drying frame fixed over its little yard, arranged so as to be pushed out to project into the back street with its load of clothes to be dried, and to pull back into the yard for access.

With this and the ventilated steam oven the drying could be well done at home instead of in the street or on the roof.

Basements.

46. The basement rooms shown in Section No. 6 could be used for any retail manufacturing business, and also for storing any class of goods to be hawked, except such as might cause nuisance. The rentals of these basements should be about half those of dwellings of equal area, or say about ½*d.* per square yard of nett floor per week.

STABLES AND WORKSHOPS.

47. The stables and workshops shown in the back street in Section No. 6 could be let at about $\frac{3}{4}d.$ per square yard of nett floor, or 6*d.* per stable stall per week.

This accommodation would be of the greatest practical value to the numerous porters, costermongers, cabmen, &c., who own their vehicles and horses or other beasts.

POWER LIFTS.

48. In any blocks of dwellings erected over business premises, as shown in Section No. 7, the proposed power lifts for raising handcarts and goods to and from the raised pathways should be at least 6 feet by 9 feet, worked either by the steam boiler used for heating the ovens or else by hydraulic power from the water mains and special cisterns, &c. A small toll might be charged for the lift, to prevent needless use.

MODIFIED PLANS.

49. All the numerous elements of these several plans for dwellings would require more or less modification to suit particular sites and circumstances; thus the several plans could each with great advantage be enlarged about one-fourth in length and breadth, thereby increasing their rentals by about one-third.

Other modifications cannot be referred to without needless length in this Essay; and the same reason compels silence on many details, some even of apparent importance, which the writer has in mind and would willingly enlarge on.

CONCLUSION.

50. In concluding this Essay the writer feels the great difficulty of knowing exactly what lines the Society of Arts and the liberal promoter of this scheme would wish to have pursued by the essayists; and he trusts that this earnest endeavour on his part to put into useful form the ideas resulting from his long and wide experience among the dwellings of the poorer classes, may to some extent promote the truly noble and most urgently necessary work of properly re-housing the poorer classes of Central London.

N.B. This Essay is accompanied by the following drawings, on four sheets :—

No. 1. Plans for dwellings in flats, each with one bedroom, dwelling-room, scullery, yard, w.c., &c., forming an entirely self-contained residence.

No. 2. Plans similar to No. 1, but with two bedrooms.

No. 3. Plans similar, but with three bedrooms.

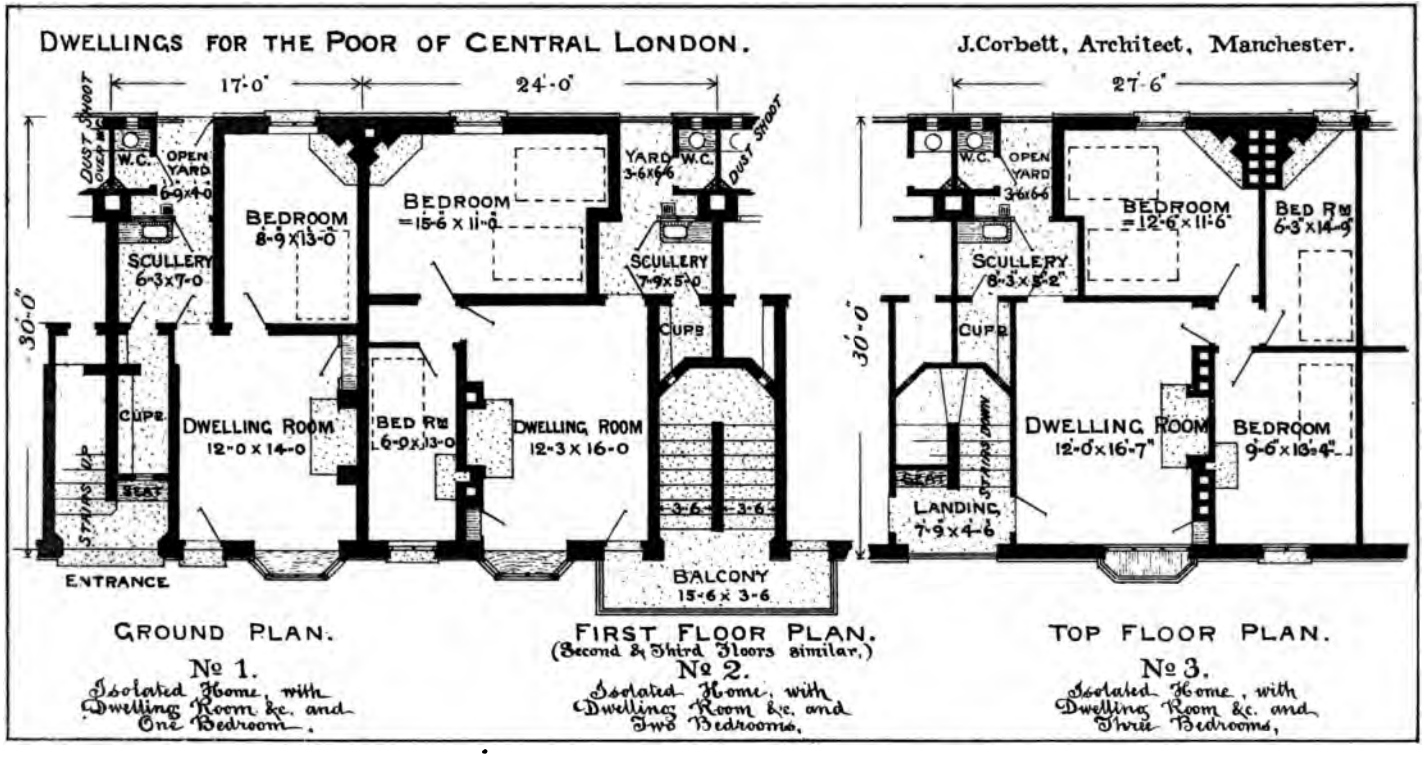
No. 4. Plans for the smallest healthy dwellings, each with one room and a bed-recess. The w.c.'s, &c., common to the four dwellings on one landing.

No. 5. Plans like No. 4, but with a bedroom added.

No. 6. Sections of dwellings Nos. 1, 2, or 3, as arranged for cheap sites, with adjacent stables, workshops, gardens, &c.

No. 7. Sections of dwellings over business premises, as arranged for valuable sites.

No. 8. Large scale drawings of a dwelling on Plan No. 1, slightly modified, showing details of construction, fittings, &c.



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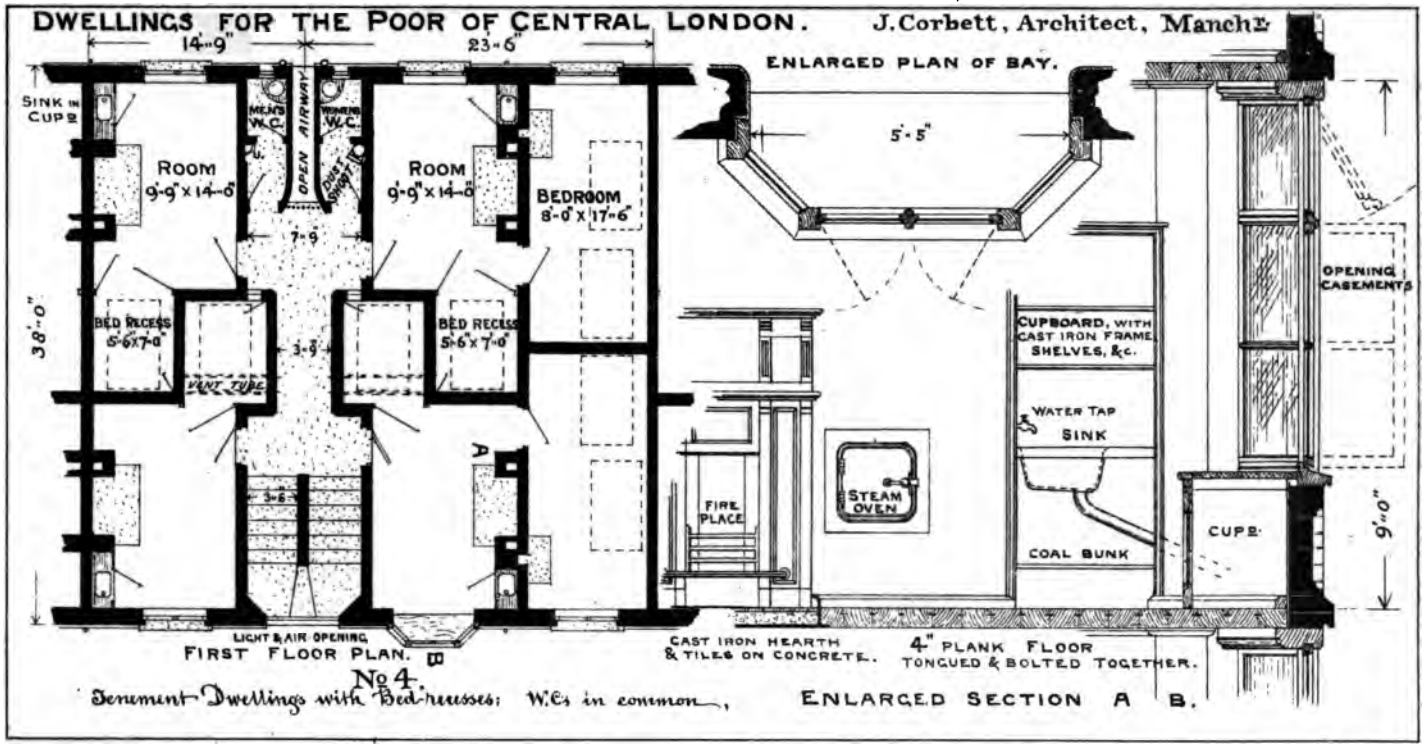

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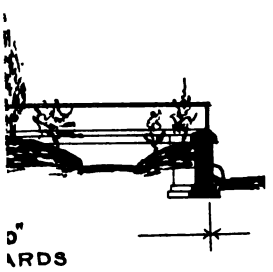

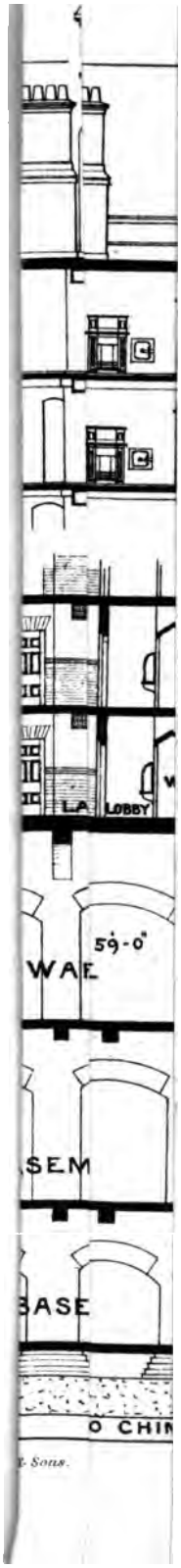

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APPENDIX A.

TERMS OF THE OFFER OF THE PRIZES.

(*From the Journal of the Society of Arts, January* 25, 1884.)

THE Council of the Society of Arts have had placed at their disposal by Mr. William Westgarth, a member of the Society, a sum of £1,200, to be awarded in prizes for essays on the above subjects.

The first prize will be a sum of £250, for the best practical essay upon the re-housing of the poorer classes, and especially of the very poorest classes, of the metropolis.

The second prize will be a sum of £500, for the best practical essay upon the whole subject of the sanitation, street re-alignment, and reconstruction of the central part of London.

The essays should include the following points :—

I. Reconstruction of the central part of London with regard to the plan of the streets.

II. Removal of the old and poisoned soil.

III. Re-arrangement of the levels, and provision of subterranean ways for the accommodation of electric wires, pipes for water supply, sewage, &c.; also provision for warehousing.

In addition to the above, there will be three further prizes of £150 each :—

1. For the best treatment of the engineering considerations.

2. For the best treatment of the architectural considerations.
3. For the best treatment of the sanitary considerations. Any or all of these last-named prizes may be awarded to the same essay as that to which the £500 prize may be awarded, or they may be awarded separately.

The essays must be sent in to the Secretary of the Society of Arts, John Street, Adelphi, not later than December 31, 1884. No essays can be received in manuscript. Two printed copies of each essay must be submitted, and it will be convenient that they should be printed in pages, with wide margins. The essay should be accompanied with such maps, plans, drawings, &c., as may be necessary, and these need not be in duplicate.

The Council reserve the right of withholding any of the prizes, or of awarding the amounts, or parts of the amounts, in any manner which may seem to them desirable. They also reserve the right of publishing any essay to which a prize may be awarded.

The name of the writer must not appear on the essay, but each essay must have written or printed thereon a motto, and be accompanied by a sealed envelope containing on the outside the same motto, and within the name and address of the writer.

The awards will be made by the Council upon the recommendation of judges, to be appointed by them, and will be final.

H. TRUEMAN WOOD,
Secretary.

John Street, Adelphi,
January, 1884.

*** Mr. Westgarth's own views are embodied in a memorandum prepared by him, copies of which can be obtained on application at the Society's offices.

APPENDIX B.

REPORT OF COMMITTEE OF ADJUDICATION.

(*From the Journal of the Society of Arts, June* 5, 1885.)

THE Committee appointed by the Council to consider the Essays sent in for the above prizes, have reported to the effect that in their opinion none of the Essays realize the requirements of the offer in such a manner as to justify them in recommending that the full amount of the prizes offered by Mr. Westgarth should be awarded. They recommended, however, that prizes amounting in all to £600 should be awarded as under :—

Three prizes of £100 each, to H. H. Bridgman, 42, Poultry, E.C. ; J. Corbett, 24, Barton Arcade, Manchester; W. Woodward, 7, Duke Street, Adelphi, W.C.

Three prizes of £50 each, to A. Wynter Blyth, Court House, St. Marylebone, W., and R. Greene, Berry Wood, Northampton ; Clement Dunscombe, City Engineer, Liverpool ; C. Scott, Town Hall, Belfast, and J. W. E. Tilley, Royal Avenue, Belfast.

Six prizes of £25 each, to A. H. De Wind, Comber, Co. Down ; J. S. Fairfax, 3, St. Paul's Road, Camden Square, N.W. ; Victor Jetley, 8, North Audley Street, W. ; T. E. Julian, 22, Palace Road, Roupell Park, S.W. ; W. H. Newell, M.D., 201, Palisade Avenue, Jersey City, N.J., United States of America; G. W. Usill, Haldon Lodge, Southfields, Wandsworth, S.W.

The Council, after consultation with Mr. Westgarth, have accepted the report of the Committee, and awarded the prizes as recommended. It has been determined that the three Essays to which prizes of £100 were awarded shall be published on behalf of the Society.

APPENDIX C.

NOTES TO MR. WESTGARTH'S INTRODUCTION.

1. The Natural Increment of Value.
2. The Great Paris Reconstruction.
3. The Possible Beginning of a Central London Reconstruction.
4. The Needle-women of East London.

1. The "Natural Increment of Value."

THIS is a term I have substituted for the so-called "Unearned Increment," which is needlessly invidious. I distinguish natural increment from that increment of site or real estate value which is due to outlay of capital. Natural increment, then, is so important a factor in any possible systematic reconstruction of London or any other of our larger towns, as a self-remunerative business enterprise, that I offer here some explanation regarding it. This article is an abridgment of some previous articles or letters I have given on the subject within the last two years, as, for instance, in the "Economist," of 18th October, 1883, and in some numbers of the "London Chamber of Commerce Journal," beginning with that for April, 1883. But I have benefited since by comparing my views on the question with those of others; and I am particularly indebted in that respect to Mr. St. Quintin, who, with his large experience in City rentals, bears fully out the great increment of the past, although noticing an arrest of this upward movement during some past years of general business depression. As this depression was immediately preceded by the specially prosperous years, and rising values of real estate generally, that succeeded the Franco-German war of fifteen years back, we must accept these alternate subwaves of excitement and depression as part of our

case, and base calculations upon larger areas of time that sufficiently ensure their subordination.

Natural increment is simply the advance of site value in a progressive country. The site is, of course, inextensible; and when the population, commerce, and wealth which are upon it increase, the site value must advance. Natural increment is, therefore, the feature of all such prosperous countries. It is especially the feature of their chief towns, whose real estate value increment is less liable to special checks and halts than that of the country generally. We have seen, for instance, that London rating value goes on continuously increasing, while many farming properties over the country have even seriously depreciated of late, in consequence of the special circumstances of unusually bad seasons for the last seven years, accompanied by unusually cheap food productions freely admitted from outside. Let us glance at the London increment. In 1841 the yearly rating value was £6,000,000; in 1856 it was £10,500,000; last year it was £28,000,000; and this year it is estimated at almost £29,000,000.

Of course, this is not all "natural increment," because there is a great deal of fresh building always going on, as well as of reconstruction and general improvement, all adding to value; while, as Mr. St. Quintin points out, some of the increase is due also to a stricter system of rating now than formerly. But, after all deductions, an enormous natural increment remains, which has been especially conspicuous over the last thirty years. London still increases in the main in population, commerce, and wealth, thus assuring us that natural increment is to continue the feature of the future as of the past.

But when this increment feature is generally known and anticipated, will it not all disappear by the expected increase passing into present value? No doubt this is to some extent the case, and is one cause of the high value of real estate in general, as compared with its rental or yield. But, in the unprecise aspects of the case, a substantial increment will always remain, as present values are mainly regulated by present business results, and not by what these latter may possibly be estimated at for the next generation.

Then, as regards the striking subwaves of alternate prosperity and depression, the main great advance in values over, say, thirty years, may comprise lesser intervals of halt or even retrogression. Mr. St. Quintin illustrates this by the fact that eleven years' rentals

in the central sites of Old Broad Street were last year renewed without advance. We must bear in mind that eleven or twelve years ago was about the climax of that marked rise in our real estate values which immediately succeeded the Franco-German war. If we draw a straight line with a distinctly upward slope, and traverse it by minor waves, alternating above and below the said line, we afford a fair idea of the course of natural increment. We are now in the depression wave; probably, near the end of it. Seasons of depression end as surely as those of prosperity. If my project is to take life, I should prefer, of the two conditions, that it started under the moderate values for the time being of a season of depression.

2. The Great Reconstruction of the City of Paris.

[*Copy of Correspondence on the subject between the London Chamber of Commerce and the British Chamber of Commerce of Paris.*]

"British Chamber of Commerce,
"25, Boulevard des Italians, Paris,
"December 23rd, 1884.

"K. B. Murray, Esq., Secretary, London Chamber of Commerce,

"Dear Sir,

"I have the pleasure to forward you copy of a letter I have received from Mr. Longhurst, correspondent to the 'London Economist,' who, at my request, kindly undertook to look into the matters forming the inquiry of Mr. W. Westgarth *in re* 'Cost of reconstruction of Paris.'

"If agreeable to Mr. Westgarth, we will publish his letter, along with Mr. Longhurst's reply, in the March number of our 'Review.'

"I am, dear Sir,
"Yours faithfully,
"A. W. Bottomley, *Secretary*."

The following are, to the best of my knowledge, replies to Mr. Westgarth's questions concerning the rebuilding of Paris:—

I do not know of any general statement of the total cost of expropriation, each operation being undertaken separately, and having its special accounts.

The practice has been to take in hand one section at a time. The city opens a credit, generally from a municipal loan, for the purchase of the houses to be pulled down, and for indemnifying the leaseholders of shops or apartments.

The ground is then laid out in plots bordering on the new street, and these are *sold* in freehold by tender. The cost of the operation can only be ascertained when the accounts are finally closed. To arrive at the aggregate cost of all the rebuilding, it would be necessary to possess all the accounts of the last twenty years or more.

A document by M. Alphand, director of public works to the city, fixes the net cost of improvements from 1852 to 1880 at a sum of 884 millions of francs for expropriations, and 352 millions of francs, for roads, foot pavements, sewers, plantations, &c.

I have not a statement of the subsequent expenditure; but the cost of opening the Avenue de l'Opéra, one of the recent operations, was 33 millions. This was, however, a relatively advantageous undertaking, as the houses removed were of a poor class, ill inhabited, while the ground gained was of enormous value, as the situation is without exception the finest in Paris.

In some cases, I should have said, the expropriations have been undertaken by companies under the guarantee of the city, or the city giving bills, "bons de travaux publics," which the contractors discounted at the Credit Foncier. Some years back the Credit Foncier held bills of this kind to the amount of 34 millions of francs, which were subsequently redeemed by means of one of the loans raised by the city.

The cost of expropriating has greatly increased since the great works were first commenced.

In 1858, when the central markets and Boulevard de Sebastopol were built, the cost was 866 fr. per square metre. Eight years later when the Rue de Turbigo was opened in the same neighbourhood, the cost had risen to 1,595 fr. What it is at present I do not know, but I remember a milliner in the Rue de la Paix—a small piece of which was taken for the Avenue del' Opera where

it joins the Boulevard, receiving £30,000 as an indemnity. That was, however, an exceptional case.

It would be difficult to fix an average advance of value of new buildings.

It has been large in the earliest operations when there was little speculation in house building, but it has gradually diminished as higher prices were obtained for the ground, and at present from over-speculation prices have risen to a height that leaves little or no room for a future increment.

Builders, in fact, have a difficulty in finding tenants to pay rents that give a fair return on the capital outlay.

Rents in Paris have, in fact, reached their maximum, and there were never so many shops and apartments vacant in the centre of Paris, tenants being driven further out unless absolutely required by business to reside in the centre.

I do not think any plan of letting ground on building leases with graduated rentals would be possible. It is not the custom in Paris to build on ground held on lease only. The exceptions are so few that it may be said that all ground is freehold. Houses are built of stone in a very solid manner, such as to last two or three centuries, and in the great thoroughfares opened by expropriations, the city binds down builders as to the plans and material, and would not allow houses to be built excepting of stone, and with a certain uniformity.

Consequently builders would not assume the expense and risk for only a temporary holding. The price paid for the ground is, besides, high in proportion.

Four or five hundred francs per square metre is a very common price for building ground in a good situation, and it sometimes reaches 1,000 fr.,[1] which could never be obtained if the purchaser was debarred from profiting by the natural increment. I do not think the charge brought against the Empire of improving the city for political reasons in an imperial fashion is justified, although I know it was brought against the Emperor's Government by his adversaries as a means of discrediting the imperial *régime*. When

[1] This estimate is a low one. One thousands francs per square metre is not considered a high price for land in good situation. We know of building sites sold for 2,000, and as high as 3,000 fr. per square metre.

a filthy rookery was pulled down, and a wide thoroughfare admitting light and air in its place was opened, this was said to be done to permit cavalry charges and the use of cannon; but the Republic has quite justified the Empire in that respect, by copying the system and even continuing the former plans, for every one of the improvements carried out since 1870 were designed under Baron Haussmann's administration, and the present Government is quite as anxious to keep the working classes in good temper by providing them with employment.

A. W. BOTTOMLEY.

3. THE POSSIBLE BEGINNING OF A CENTRAL LONDON RECONSTRUCTION.

While the enormous value of London's business centre defeats every idea of dealing reconstructively with it by direct purchase, I have hinted that something might be done by the voluntary co-operation of its wealthy occupants. If a trust of adequate resource took successfully in hand the ill-conditioned sections just outside of the centre, those occupants of the centre itself might be aroused to co-operative action. The aim everywhere in and about the crowded centre should be towards a systematic reconstruction, and I have endeavoured to indicate in some leading features what the future of our grand metropolis requires in that way. We should aim to rebuild the city upon a roomy, or lofty, and continuous "subterranean," and upon a more healthful and convenient level, ejecting the fœtid old soil, which may usefully serve for further Thames embankment. We should make a terrace construction, with bridged connections, in order to lift foot passengers out of the dangers of the streets, as well as to give the profit of the double line of shops, and to add a strikingly ornamental feature to the city. Lastly, the new roofage should be a public park or garden. Science is sufficiently advanced with heating substitutes to enable us to forbid smoke to the reconstructed city.

The best line for an initiatory step of Central London Reconstruction seems to me to be that between St. Paul's and the Royal Exchange. And in this view one may regret the reconstruction and improvement, decidedly good in itself but unsystematic, lately

effected towards the eastern extremity, where the new Queen Victoria Street and Cheapside and the Poultry converge, as all this only increases costs and difficulties. Both are notable sites, not very far apart, and on convenient levels. The adequate reconstruction of the business centre would be a grand opportunity. The very inelegant old Mansion House would then surely disappear for something more worthy of its situation, its business, and its occupants; and the Bank of England might then realise how their vast and almost priceless site is utterly wasted upon the most straggling and inconvenient maze of banking accommodation. A connection with the adjacent Cannon Street Station would decide for this as the great railway centre for the metropolis.

In such costly quarters all this is possible only to co-operation. But a responsible trust may successfully head the movement, and have resource sufficient to complete it by buying up any comparative few who held back. Judging from the incessant private reconstruction going on over all the busier and more crowded parts of London, one may anticipate large and ready co-operation under all the economy and advantages of the proposed systematic procedure. If a nucleus of reconstruction were effected in this centre, whether in the particular direction just alluded to, or in any other less difficult to deal with, opportunities of extension would gradually occur. The vigour of our proposed trust outside of the costly business centre would soon be communicated to those within, so as to arouse their responsive co-operation.

4. The Needle-women at the East-End.

(*Reprinted from the Pall Mall Gazette*, 18*th July*, 1884.)

Yesterday, at No. 8, High Street, Shadwell, there was witnessed the first beginning of an enterprise which, if supported as it deserves, will do much to lighten the lot in life of some of our working women. At that address a philanthropic lady, of unbounded energy, but, alas! of delicate health, has started what is hoped will be the first of a multitude of Working Women's Co-operative Associations, where the public will be able to enter into direct communication with the needle-women, so as to obviate the intervention of the middlemen or sweaters. At the simple little

shop in Shadwell High Street Mrs. Heckford sells articles of dress made on the premises by needle-women, none of whom are required to work more than eight hours a day, in a healthy work-room at a decent wage. The small capital of £500 needed to set this modest establishment going has been supplied by some friends interested in the lot of working women, and the success of the experiment will be watched with the keenest interest by all who are acquainted with the sad and often terrible condition of the East-end needle-women.

How many women there are in the East-end who live by the needle I do not know. Mrs. Heckford told me yesterday that from where we were standing you could go east, west, north, and south, and in almost every house that you pass you would find at least one needle-woman. In all London, according to the last census, more than a quarter of a million women were returned as making their livelihood by that means—an army of working women more numerous than any other class, excepting those engaged in domestic service. The more's the pity that their lot should be so hard. In face of a general and most indisputable improvement in the condition of labour, it would seem incredible, if it were not only too horribly true, that the condition of the needle-woman is even worse than it was when the "Song of the Shirt" stirred the nation's heart. That song of woe might have been composed yesterday and every word of it might be applied to the needle-women, thousands of whom are crowded together in that solid block of misery, the centre of the East-end. If in Hood's time the needle-women were chastised with whips, they are to-day chastised with scorpions. Should there be any who doubt that this is so, let them take the train from Stepney to Bow Road, and plunge into the endless mass of low red-roofed houses which spread to the right and left as far as eye can reach; and miles further down to the river banks. In most of these miserable abodes the needle-women are at work. Any time, any season will do; they know no holiday, except that involuntary one when there is no work to be had and when grim death itself is their guest, death of starvation. But it is perhaps better to go on a grey wintry day, for when a reflection of the sunlight falls into the dens, they are almost too ghastly a picture to look at. And this is how they live and how their work is done. They begin early, as early as possible, for a day's work with them means fourteen or

fifteen hours' stitching if they mean to earn a shilling a day. The work is done for large London firms, but before Mrs. Heckford's courageous little experiment there was no direct communication between employer and employed; it is almost all done on the "sweating" system. A "sweater" ("I call them middlemen, it's more polite," said a gentleman the other evening at the meeting of the Women's Provident and Protective League, but "sweater," though less polite, is a term more to the point) receives a quantity of work from the employer, which he has to deliver at a certain time and for a certain price—a moderately good price, I hear; he gives the work out either to the women themselves or to another sweater. It is often the case that the second "sweater" sublets the work again, and the third once more, each of course profiting by the process. Can it be surprising, then, that the wages of the poor women are low? They received 1*s.* 6*d.* for a dozen shirts, 9*d.* for a dozen petticoats, 4¾*d.* for a pair of trousers, which last sum is divided between machinist and "finisher," and 3*d.* for a braided knickerbocker suit. How pretty they look in the show windows, the airy, lace-trimmed children's fancy frocks and aprons! A worker who with trembling fingers stitches them together can earn 1*s.* a day by them, 1*s.* 6*d.* if she works from 8 A.M. to midnight. No wonder her thin fingers tremble with haste, with weakness, and with the constant fear that her work may get soiled or that some little part is not done exactly as prescribed. Woe be to her if the latter be the case! For a walk to the shop to deliver her work means the loss of half a day; often it means a precious penny for the loan of a pair of boots; and at times, when she is too weak to walk, the sum of fourpence for riding; and if there is the least fault in one of the articles, the whole dozen—they are usually taken in dozens—comes back and has to be returned by the worker. And let her beware of coming to her destination an hour later than ordered. "Drilling" is then her share; "drilling" means waiting for days, and waiting means starving. Sometimes in the case of married needle-women the man earns something towards a living, and then the misery is not quite so great. The fact, however, is that in the East-end thousands of men are always out of work, and if not out of work many of them in the class which live with the poorer needle-women are "in trouble" caused by legal authorities, which trouble compels them to leave their homes and set up in other quarters.

What has been said above applies only to the "honest" needle-woman. There is a way by which she can escape poverty and hunger, and it is, alas! followed by the majority. "Life in the streets," provided the girl has any personal attractiveness, is more remunerative; it pays so well that finery can be bought instead of rags, and idleness and ease may take the place of toil and worry. No wonder they fall; the temptations are strong. Here, for instance, is a little low room. A sewing machine stands before the window. In front of it sits a tall, pale girl, with large, beautiful eyes, full of brilliant light. The girl is in a decline. By her side sits an old woman, also busy with her needle. "She cannot always do the machine-sewing now, she faints away so often," the old woman says, looking at her companion. "She goes to the hospital, and they say she must have nourishing food; but all last week we had nothing but bread. How can we buy nourishing food?" she adds, with a humble smile. There is one way of supplying that need, but the girl would rather die. It is no phrase, but a stern reality. She is dying now, one among unnumbered examples of the silent heroism of the East-end, the unnoticed martyrdom of the abject poor.

I have said before that their work never ceases. There is, however, one exception. When the shops are "taking stock"—which happens twice a year—work is slack, and it fares hard with the workers; otherwise good needle-women have not many difficulties in obtaining work. Of trade unions they know nothing, and even if they did they would not dare to join them, partly from fear of exciting the ill-will of the employers, or rather of the "sweaters," and also because there would be plenty of people willing to take the work for as low and even lower wages, should they attempt to strike. They are hungry and they cannot wait, but must take what they can get. The introduction of sewing machines is greatly lamented in the East-end. Before their time pay was incomparably better; the women could earn a living by their wages then, now they barely exist. Work which cannot be done by machine is by no means better paid because it is done by hand. In one case—anybody willing to go to the East-end is free to inquire about the correctness of this statement—two women are sewing soldiers' kits; it cannot be done by machine, and by eighteen hours of labour the women are enabled to earn each 11½*d.* a day. Why, I ask, in the name of wonder are there still so many women engaged

in this work while domestic servants are always wanted? Because, I am told in reply, to become a domestic servant a girl must at least have some idea of decency and order; before she can lay a table she must know what it is to sit at a covered table; and before she can make a bed she ought to have seen something else than a ragged palliasse, or, worse still, a bed filled with dirty rags, the only bed of many of the poorest. This is said to be the case with many. But there are many well skilled in the domesticities who nevertheless starve as seamstresses. It is the common resource of the female unattached. Nearly every one can sew, the work can be taken up and dropped as the case may be, and it is a handicraft to fall back upon.

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CHANCERY LANE.